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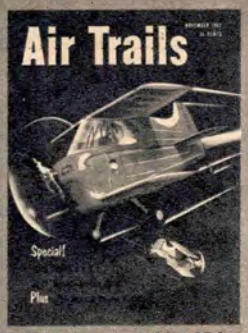

Cover: Stits' Sky Baby powered by 85 hp Continental engine—by S. Calhoun Smith

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FROM THE READER

All communications to the editorial offices should be addressed to Air Trails, 304 E. 45th St., New York 17, N.Y.

Bearcat vs. Tigercat . . . A couple of days ago I made a solid model of the Grumman F8F Bearcat. I have also heard of the Grumman F7F Tigercat. Which was faster, the F7F Tigercat or the F8F Bearcat?

Tom Stengel, St. Louis, Mo.

• The F7F Tigercat is a twin-engine Navy and Marine fighter. It is slower than the F8F Bearcat.

Baffle Plates . . . I have noticed on several of your recent diagrams of jet planes (which I think are very interesting) so called "baffle plates." Would you please explain just what these are for?

Wayne Baldwin, Brady, Tex.

• In this instance, the "baffle plates" you mention serve to prevent progression of a stall toward the tip of the plane's wing. They act like dams rather than baffle plates and are also known as "aerodynamic dams."

Lightplane Manufacturers . . . I am interested in Lightplanes of the U.S., but I am unable to find the home offices.

Thomas Wilk, Lilly, Pa.

• Here are some addresses of lightplane manufacturers: Aeronca Manufacturing Corporation, Middletown, Ohio. Cessna Aircraft Company, Wichita 15, Kans. Luscombe Airplane Corporation, Garland, Tex. Mooney Aircraft Inc., Wichita, Kans. Piper Aircraft Corporation, Lock-Haven, Pa. Taylorcraft, Inc., Conway-Pittsburgh Airport, Conway, Pa.

Color Scheme of Me. 109 . . . I am building a Messerschmitt 109. Could you please tell me the color scheme of a Me-109 at the beginning of World War II?

Martin Wood, Jewett City, Conn.

• Some Messerschmitt 109's were painted dark blue upper side, a light blue underside at wing tail and fuselage, with yellow or red spinners.

Designation Letters . . . Does the de Havilland Vampire have radar and is it a two-man plane? What does the letter "P" enclosed in a circle mean? I've seen it on pictures of almost all British jets. What does "Y" mean in USAF designation, such as YF-93 or YF-86D? What happened to the Curtiss XF-87 "Blackhawk" four-jet night-fighter?

Thomas G. Hart, Waterford, Pa.

• Two-place N.F. Vampire (Night Fighter) is equipped with radar. Letter "P" in circle on the British plane means it's an experimental aircraft. Letter "Y" as in YF-93 means this model is in service test status.

The Curtiss F-87 Blackhawk was canceled out.

Prop from Real Plane . . . I wish you could tell me where I can get a prop from a real plane. If so, how much will it cost and where can I send for it?

Mel Gardini, North Chicago, Ill.

• To obtain a propeller, suggest that you write to Karl Ort, York, Pa. He has some available from $3 and up—depending on size.

What Prop? . . . I have a model airplane (FF) powered by one of the small Half-A motors. I spent much time in building it and I was pleased with the results. But when it came to flying, the thing would not get more than ten feet from the ground.

Allow me to tell you that I have been building rubber-powered models of all kinds for four years and this is my first gas-powered model and I do not think that the plane is too heavy.

I used a 6" dia., 3" pitch propeller and as I do not know much about these things I would like to know if another propeller is more suitable.

I would in addition like to know the meaning of the "pitch" and if more pitch would in turn mean more speed and so on.

Robert Chouimard, Montreal, Can.

• Perhaps a 5¼/4 prop will help a lot. The engine should turn up at least 10,000 rpm. Your model weight might be too high. 6½ to 7 oz. is pretty high for a small flying scale model. Pitch is the distance the prop would move in one revolution if it were travelling through a solid substance such as water.

Curtiss Tail-first Fighter . . . Do you have any pictures of the Curtiss-Wright experimental tail-first fighter "Blue Goose." Why wasn't it put into production? Also, what was its designation?

My dad formerly worked with Curtiss-Wright and he thinks it was XF-2. Is this right?

C. B. Hammond, St. Louis, Mo.

• The only Curtiss tail-first fighter that we know of was the experimental XP-55 Ascender. We believe it was not too successful; anyhow, the Air Force did not order them.

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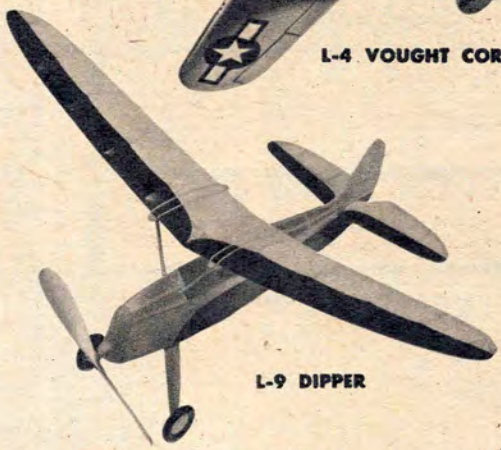

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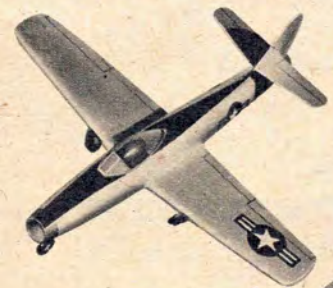

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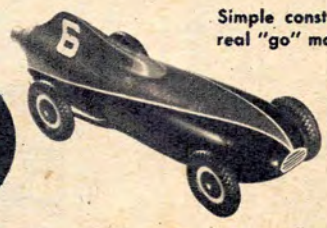

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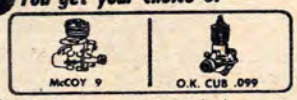

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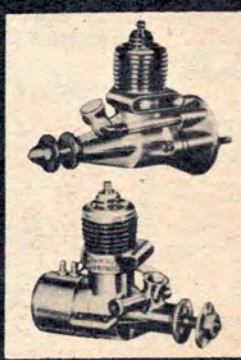

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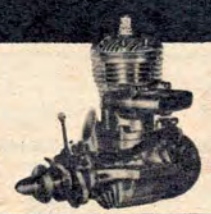

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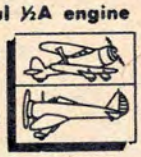

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R/C

Around the modelplane radio-control circuit . . . comment and reports by a leading authority

■ Quite a few contest results have come in, including a Flash on the Nats Winners. Seems that the West-Coast boys really took over at the Nats R/C Event, as was to be expected; one club in particular—the Mustangs—sure did well for themselves. A majority of this San Francisco group use Rockwood A. F. reed equipment, and it seems to have paid off for them this year. Top Nationals 1952 winners were: 1) Alex Schneider; 2) William Deans; 3) Jim Walker; 4) L. D. Crisp; and 5) Ray Regalia.

Air Trails will carry a complete story on the big meet, with a breakdown of planes, equipment, and the participants themselves, as soon as all the data can be gathered and checked. Watch for this.

Results of the R/C event at Iowa State Plymouth Meet: 1—Paul Jones (Cedar Rapids), Rudder Bug with pulse control & Good Bros. radio. 2—Claude McCullough (Ottumwa), original with pulse and MacNabb 465. 3—Kenneth Jackson (Waterloo), modified Super Brig., MacNabb 465 with esc. Paul Jones was using a relay pulser similar to that of Fig. A, this column in September issue.

R/C event at Johnsville (Pa.) Plymouth Meet, won by Carl Schmaedig (Rahway, N. J.). 2—John Klopp (Baltimore). 3—Mike Guarneri (Newark, N. J.). Event run by Dick Padgett who was attending just for the fun of it, since he had no ship flying. There were 9 official entries, and the AMA stunt pattern was used. Most of the equipment was 27 mc.

Flying Bison Meet at Buffalo: 1—Fred Collins (Pittsburgh), Rudder Bug with Cyke, Good Bros. 50 mc. 2—Norman Tauberg (Pittsburgh), Rudder Bug with OK60, Good Bros. 50 mc. 3—Jim Schenck (Pittsburgh), Rudder Bug with Madewell, Good Bros. 50 mc.

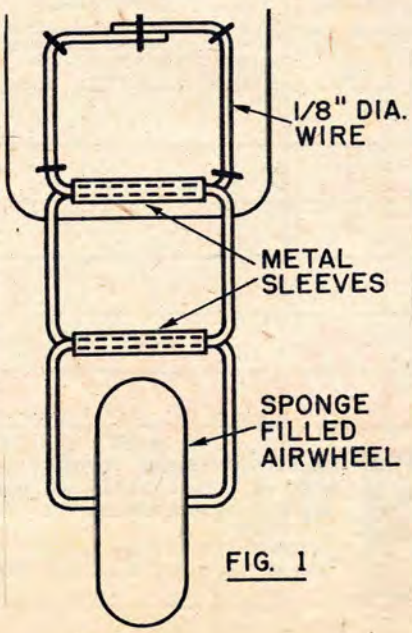

FIG. 1

R/C Event at Rochester: 1 and 2 as above. 3—H. deBolt (of Williamsville, N. Y.), Live Wire Senior with MacNabb 465, Torp .19.

Second Flying Bison Meet: 1—Ken Strauch (Buffalo), Live Wire Senior with O & R 19, MacNabb 465. 2—Vernon Krebiel (Clarence, N. Y.), original with OK .09, Aerotrol 50 mc. 3—Ray Edmunds (Buffalo), Live Wire with Mills .08 diesel, MacNabb 465.

Hamburg N. Y. Cloud Busters Meet: 1—H. deBolt, as above. 2—William Frazer (Binghamton), Arden .09 Live Wire, own 50 mc. equipment. 3—Clayton Thomas (Bemus Point, N. Y.), Cub .09 Live Wire, Aerotrol 27 mc.

As seen from the above, the Flying Bisons have held two R/C Meets, the first being run with the regular AMA stunt rules, and the second with the Flight Pattern system. They found that hot stunt men with hot planes dominated the former, while in the second, the beginners seemed to do well in competition with the hotshots. This has been the feeling of flyers at other meets where the Flight Pattern was used. Of course, it won't be too long before the experts will have this down pretty well, too.

However, it doesn't take any super ship to do a perfect pattern. As Harold deBolt, who sent us this report, says, "It gives the beginner a chance in competition, yet it is also a plan by which *no one* risks his aircraft unnecessarily while trying to do stunts which he or his model may not be capable of!"

DeBolt feels Contest R/C is now in much the same stage as was controlline stunt several years ago, and that it may eventually be wise to split R/C into two categories, one for the wild stunters, and one for the precision flyers. By the end of this contest season we should have sufficient data to decide this, and decide we must, for remember, the AMA Contest rules are due for revision at the close of the year, the new ones starting with January, 1953.

Q. & A. E. Carlton Harris, Marilla, N. Y., is puzzled about the wire size on the receiver coil shown in the A. T. Annual receiver. We've mentioned this before, but it continues to bother new R/C converts. Size should be as shown on the drawing of the coil, #28 enamelled wire. He also is bothered by our mention of the use of a meter to check the screen grid current of the 1S4 transmitter tube. Few builders do this and it really is not at all necessary. Our advice is to forget it.

Robert Nickel, Brooklyn, N. Y., wonders what is the wing and power loading of the average R/C ship. Well, we are in the midst of something of a revolution in R/C design, and it is extremely difficult to set any figures. At risk of sticking our neck out, we would say that probable figures might be around 16 oz. per square foot for wing load. Power loading varies even more; for example, some flyers consider a 29 plenty for a Rudderbug, which has 850 sq. in., while (*Continued on page* 57)

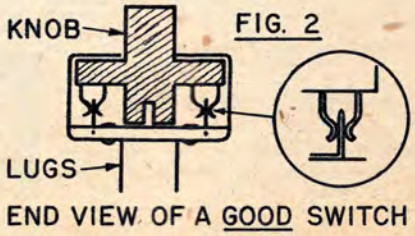

FIG. 2

END VIEW OF A GOOD SWITCH

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air notes | AVIATION TODAY AND TOMORROW

Above is Douglas XA2D-1 Skyshark, a carrier-based experimental attack bomber powered by 5500 hp Allison XT40-A-6 turboprop engine driving contra-rotating "Dutch windmill" props. Engine consists of two separate units, each developing 2750 hp, connected to one gear box. Two prop shafts are one inside the other, the outer one being hollow.

★ ★ ★

FLYING SAUCERS which worried Washington with their luminous appearance and produced pips on radar screens, may be nothing more than physical phenomena known as "anode glow" from ionized layer of air. Such "glow" has been artificially produced in a laboratory by physicist N. W. Scott who made the balloon-like lights move at different speeds, change color, appear and disappear at will. What is more, these lights, closely related to "Aurora Borealis" and "St. Elmo Fire," will show up on a radar screen.

★ ★ ★

WILL ROGERS SKYWAY is the name of the new transcontinental airway for private pilots stretching from New York to Los Angeles. Will be 40 miles wide and equipped with ground markers to facilitate navigation. . . . CAB decided against ordering civil aviation to change over to knots for measurement of distance and speed. . . . WORLD SOARING CHAMPIONSHIP contest, held this year in Spain, was won by England's ace soaring pilot, Phillip Wills. Highest U. S. scorer was Paul MacCready, Jr.

★ ★ ★

BELL X-2, rocket-powered swept-wing supersonic research plane, delivered to Edward AFB, Muroc, Calif., for flight tests. Plane has K-Monel metal fuselage, stainless steel wings. Powered by 15,000 lb. thrust Curtiss rocket engine, is expected to reach speed of 1500 mph at 100,000 ft. . . . ALL-WOMEN TRANSCONTINENTAL AIR RACE sponsored by the 99ers, from Santa Ana, Calif., to Teterboro, N. J., was won by Shirley Block and Martha Baechle of Long Beach, Calif. The girls flew a Cessna 140. . . . NORTHROP F-89 Scorpion all-weather fighters assigned to Griffiss AFB, Rome, N. Y. and Presque Isle AFB, Maine.

★ ★ ★

TWO SIKORSKY H-19 helicopters safely negotiated a transatlantic hop from Westover Field, Mass., to Prestwick, Scotland, en route to their base at Wiesbaden, Germany. This is the first time that rotary wing aircraft have crossed an ocean. Helicopters were equipped with auxiliary tanks giving them a range of over 1000 miles. . . . GLASS will probably be the material for future planes traveling at two to three times the speed of sound, according to Thomas E. Piper, director of materials and process engineering of Northrop Aircraft. Use of glass plastic laminate is based on the fact it can withstand searing skin friction temperature generated in ultra-high-speed flight much better than most metals employed at the present time. Such planes will be glass-riveted and have light titanium frames.

★ ★ ★

USAF has now an entire jet bomber wing in Europe. The 47th Bombardment Wing consisting of B-45 Tornados is stationed in England, having flown over in mass formation from Langley Field, Va. . . . NORTH AMERICAN F-86 Sabre holds an 8 to 1 kill ratio over red MiG 15s. . . . LONGEST overwater flight for passenger airlines will be undertaken by Quantas Empire Airways on their scheduled route between Sydney, Australia, and Johannesburg, South Africa, using 38-passenger deluxe Lockheed Constellations. The overwater hop, 2677 miles, is between Cocos and Mauritius islands, requiring about 12 hours.

★ ★ ★

TWELVE U. S. jet aces in Korea have shot down more jet planes than all the pilots in the entire Chinese Air Force. . . . USAF wants a jet trainer specifically designed for the task and is letting out experimental contracts on competitive basis. Has been eyeing with interest the Dutch Fokker S-14 side-by-side trainer, first of its kind. . . . MOST impressive sight is the slow flying of the Douglas XF4D-1 triangle wing interceptor demonstrated during Aviation Writers Association Convention. Plane flew at an extremely high angle of attack, nearing 30 degrees, at altitude of not more than 200 feet and what appeared to be no more than 75 mph, completely around Edward AFB. Top speed of the plane is probably well in excess of 600 mph. Amazing performance, though somewhat disquieting to pilots accustomed to conventional aircraft—and today's speeds.

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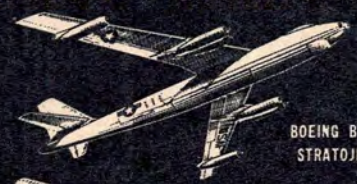

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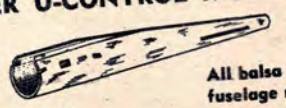

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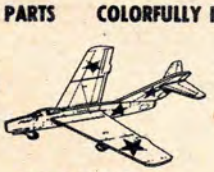
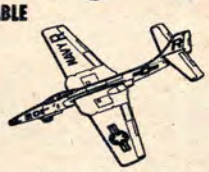


RUSSIAN MIG-15

F7U CUTLASS



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Lockheed P-38 Lightning	Russian Mig 15
Lockheed C-69 Constellation	Vought F7U Cutlass
Boeing B-29 Superfortress	No. Am. B-45 Tornado
Sikorsky H-5 Transport	Boeing B-47 Stratojet
No. Am. T-28 Trainer	Northrop F-89 Scorpion
Convair B-36 Bomber	Grumman F9F Panther
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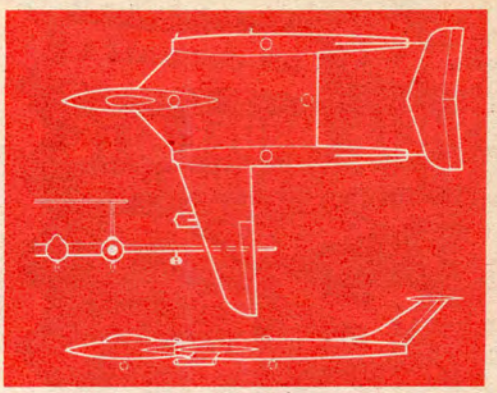
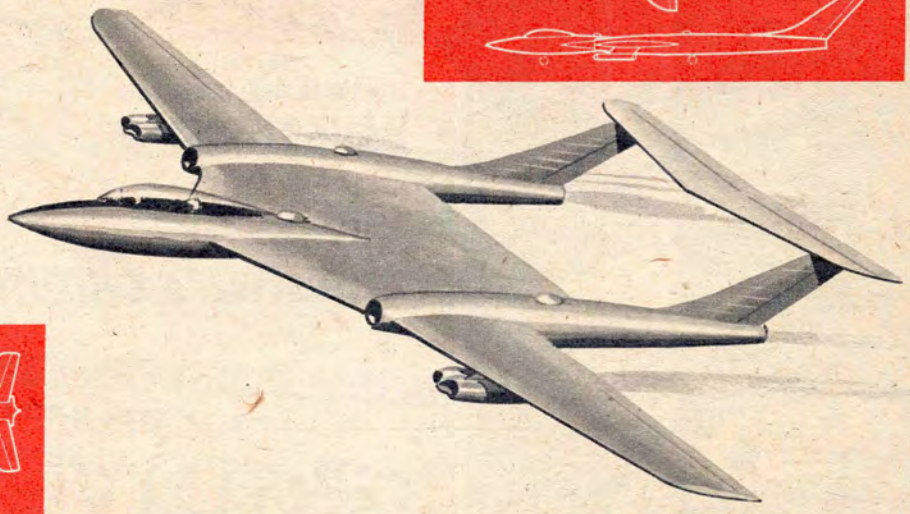
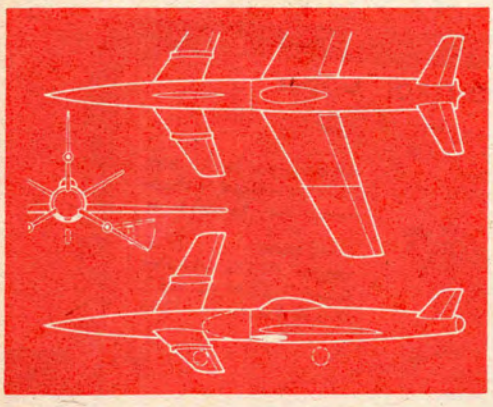
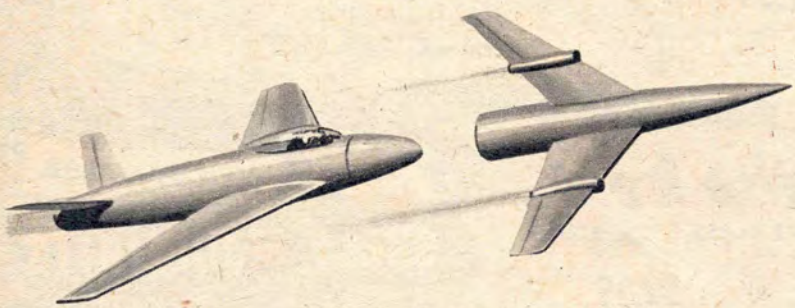


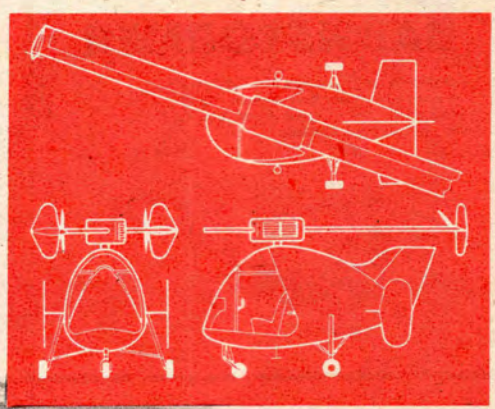
Top honors of the month go to Warren Chitwood of Los Angeles, Calif., for design of a long-range jet bomber. Has six jet engines, two in the tail booms equipped with afterburners and four in pod-type nacelles under wings. Armed with twelve 20-mm cannon and capable of carrying two parasite fighters. Top speed is 600 mph. Range 8000 miles. ▶



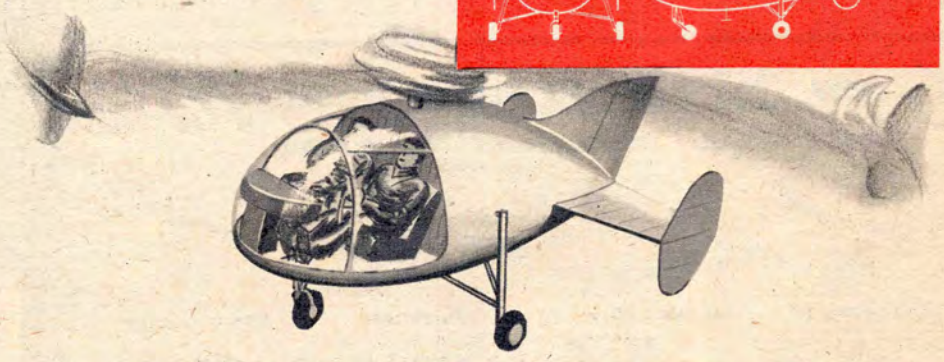


◀ Thunderhead is name of this airplane-guided missile combination by Jerry Gibson of Huntsville, Ala. The carrier is powered by two turbojets, the missile by four solid-fuel rockets. When combination is in range of enemy bomber, missile is launched by pilot of mother-plane. Touchy CG problem.





Torqueless helicopter by Georges Chaulet of Antony, France. Engine located in rotor head, drives tip propellers through shafts. Fins at tips provide automatic stability for hands-off flying. Pitch angle of blades is varied through aileron-like controls on rotors. Rotor dia. 25 ft. Speed 73 mph. ▶



Air-Trails has opened its columns to those who are interested in presenting plans for "aircraft of the future." Rules governing the competition are as follows: Three-view sketches of the proposed aircraft will be required. These should be not less than 8½ x 11 inches for the entire three views. Give sketches of the complete airplane in three-quarter front and rear positions. Photos of a model of proposed design may be included. Information of power plant(s) estimated performance, dimensions, and explanations of any unusual features are required. Data as to age, occupation or schooling of the entrant will be welcomed by the editors and judges. The design may be of any type: commercial aircraft, military planes (fighters bombers, troop transports), planes for the private flyer and single-engine sporting or racing craft. The entry each month judged the most practical or of the greatest significance will receive an award of $25. Payments of $5 will go to the runners-up. Entries will not be returned and for that reason those participating should keep copies of all material submitted. Mail entries to Airmen of Vision, c/o Air Trails, 304 E. 45th St., New York 17, N.Y. Editors regret that because of large number of entries they cannot enter into correspondence on A. of V.

KENHI WINNERS CIRCLE ...

BARRY ROBERTSON wins the 1952 Senior National Championship flying KENHI Models!

"You too can win contests!"

says Barry Robertson of North Hollywood, California; winner of these and many other trophies flying KENHI models. The beautiful flying characteristics and the simple construction make KENHI models easy for even the novice to build and fly.

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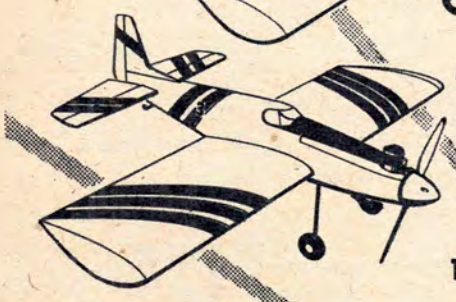
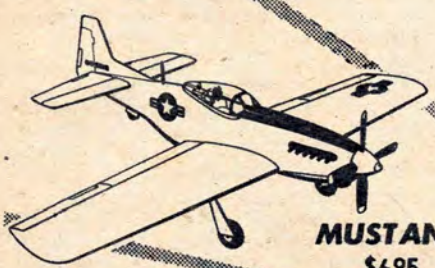
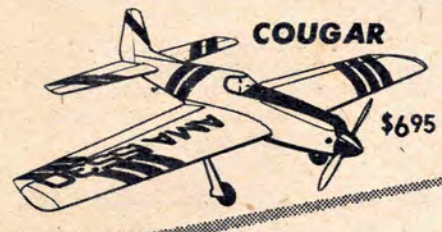


BOBCAT $395



MUSTANG $695



COUGAR $695

BEAVER $295

MUSTANG
1st Place Sr. Flying Scale
1952 NATIONALS

SPECIFICATIONS	WILDCAT	BOBCAT	COUGAR	MUSTANG	BEAVER
Wing Span	39 in.	39 in.	51 in.	48 in.	44 in.
Length Overall	30¼ In.	30¼ In.	36¼ In.	36½ In.	26 In.
Wing Area	330 Sq. In.	387 Sq. In.	412.5 Sq. In.	372 Sq. In.	233.375 Sq. In.
Flap Area	55 Sq. In.		137.5 Sq. In.	84 Sq. In.	
Total Wing Area	385 Sq. In.		550 Sq. In.	456 Sq. In.	
Air Foil	HJ-03515	HJ-03515	HJ-03515	HJ-04015	HJ-10400
Finished Wt. (Approx).	2¼ Lbs.	2 Lbs.	2¾ Lbs.	2½ Lbs.	6 Oz.
*Wing Loading	.093 Oz.	.083 Oz.	.084 Oz.	.087 Oz.	.0257 Oz.
*Wing Loading with Occupant					.0428 Oz.
Class	**.19 to .35	**.19 to .35	**.29 to .50	**.29 to .50	½A
Type	Full Stunt	Stunt Trainer	Super Stunt	Full Stunt Scale	½A PAA Load

*Per Sq. In. (Approx.) **Engines

Designs by HI JOHNSON

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Burbank, California

Fly With KENHI
See Your Dealer

"I WON'T MAKE THAT MISTAKE AGAIN!"

"After World War II, I didn't take advantage of the GI training that I could have received. Believe me, I've been sorry ever since, but I won't make that mistake again. When this ruckus is over, *I'm going to school.* I'll catch up with those guys who took advantage of their GI training."*

*This same story — almost word for word — has been written to SPARTAN by many, many men in the service. Others have told us personally, when they visited SPARTAN.

Perhaps you are one who hasn't taken advantage of the GI training available to you. Or, maybe you are already in aviation but are stymied on a particular job through lack of training for one with more pay and greater chance for advancement. Whatever the reason, write to SPARTAN for information. Visit us, if possible. SPARTAN can train you — in a remarkably short time — for a job in aviation that will pay you well to start and will offer you greater opportunities in the future.

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Today's Onlooker

Tomorrow's Pilot

By GEN. CARL A. SPAATZ

Former Chief, U. S. Air Force; now Chairman, Civil Air Patrol Board

An Interview with Kendall K. Hoyt, Washington Correspondent, Air Trails

Q. General, you have been widely quoted on the urgent need for more young men in air careers. Here is a picture of one whose interest is caught by a model plane. Maybe that is a first step toward placing him some day in a real aircraft—if something is done quickly to hold him before he turns to something else. What can be done?

A. Get him to building models, of course, instead of just looking. This worthy, inexpensive hobby teaches the principles of flight anywhere, city or country. It brings aviation home to entire families.

Q. And he can fly the models after he learns to build them?

A. That's the point. If his handiwork crashes, build again and better. Fly in competition with enthusiasts of all ages. That builds more than models; it develops skill, character.

Q. But where from there? At least 3 million Americans are active aeromodelers, the majority 'teen agers. Yet few—too few—go finally into aviation. Isn't there an unfilled gap here?

A. Yes. We must somehow bridge to full-scale planes. The Civil Air Patrol is ready to take the 'teen-age boys and girls a step beyond modeling in its ground courses, taught by adult flyers, and actually flies them in Air Force planes to give them the feel of the sky. Less than half its goal of 100,000 cadets has been met.

Q. In other words, little is being done to sell the aeromodelers on going from make-believe to real flying?

A. That is the gap. Civil Air Patrol can go farther in offering, within its own ranks, a start on models and step-by-step progression through its preflight training. To reach still younger Americans, much can be done among the Explorer Scouts and the thousands of model clubs in all parts of the country.

Q. What is the Air Force doing to this end?

A. Fast progress may be seen in the rise of the World Wide contest for our own airmen, now a major event though it started only last year. The winners enter national and international contests to take prizes against all comers. Air Force Bases are often used for civilian model meets. More can be done.

Q. Another Air Force program where volunteers are needed is the Ground Observer Corps. CAP cadets and Explorers are making fine spotters. Couldn't they also teach identification through models?

A. We all know how quick youngsters are to recognize all types of planes. If their aeromodeling skill were applied nation-wide, realistic models would be available in every area to teach the adult watchers. In such a contest, many recruits might well be gained for the GOC.

Q. What would you think of giving flight scholarships as prizes for the best models of U. S. and foreign planes?

A. That should stir enthusiasm

(*Continued on page* 56)

VOTE for the SPAATZ PLAN! If you want a flight scholarship . . .

Return this coupon today to help us prove that this nation-wide model and flight training program will work in all regions.

TO: Editor, AIR TRAILS
304 East 45th St.
New York 17, N. Y.

YES, if offered the prize of a flight scholarship at my local airport for a scale model to help the Ground Observer Corps in recognition training, I would at once enter this contest and build a model.

Name.....Age.....
Address.....
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.....
(City) (Zone) (State)

YOU CAN ENTER ANY OF THESE 28 MONOGRAM MODELS

Win an Award in Your Local Hobby Store's Own

MONOGRAM Model Building CONTEST

Two Age Groups • 16 Trophy and Honor Medal Awards

Many model and hobby dealers are sponsoring Monogram Model Building Contests this month. See your dealer. If he is sponsoring a contest get a famous Monogram Kit from him and build and enter a model yourself. Enter as many of the 28 models shown here as you want. Pick your favorite — SPEEDEE-BILT FLYING MODELS, 85c — SUPERKIT SCALE MODELS, 89c — JET POWER RACERS, 60c to $1.00 — FIGHTING SHIPS, $1.25.

You'll have fun building any Monogram Model and your model will not be required to fly or operate. It will be judged on appearance only. Get FREE entry blank with each kit from your dealer. Juniors, up to 13 years old. Seniors 13 years and older.

Speedee-Bilt

G10 Thunderjet F-84

G15 Warhawk P-40F

G14 Corsair F4U-5

G2 Aeronca

G13 F-86 Sabre Jet

G9 F-51 Mustang

G6 Long Midget

G5 Boeing Kaydet

G3 Monocoupe

G8 Spad Pursuit

G7 Cessna Seaplane

G12 Hellcat

G11 Navion

G1 Piper Cub

G4 Ercoupe

Superkits

T3 Thunderjet F-84

T2 Corsair F4U-5

T1 Mustang F-51

Jet Race Cars

R4 Midjet 85c

R1 Hot Shot 70c

R2 Terra-Jet $1.00

R3 Mono-Jet 85c

B6 Aqua-Jet 60c

1st, 2nd, 3rd Place Trophies in Each Division, Junior and Senior.

4th, 5th, 6th, 7th, 8th Place Medals in Each Division, Junior and Senior.

Fighting Ships

B4 Battleship

B3 Cruiser

B1 Landing Ship LST

B2 Destroyer

B5 Carrier

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There's an important high priority job in aviation waiting for you... *however*, if you do enter the services, Embry-Riddle training will definitely give you rating advantages. Thousands of Air Force men are Embry-Riddle trained.

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- ☐ A & E Combined with Commercial Pilot
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Check One { ☐ Veteran ☐ Non-Veteran

TRAIN IN MIAMI -- AIR CAPITAL OF THE WORLD

Interceptors beyond Sound

Radar and electronic gadgets will turn the future supersonic 'ceptor into "bird dog" aloft

■ You relax with several of your squadron buddies in the big trailer that serves as the mobile ready room. A light but steady October rain drums against the metal roof. You pilots of B Flight are on "standby," which means that you are to be ready to "scramble" within two minutes.

Then it comes. The loudspeaker squawks terse take-off orders. Grabbing helmet and oxygen mask, you sprint to the nearby revetment where the delta-winged interceptor squats ready for almost immediate take-off.

The crew chief jerks away the protective tarpaulin, then makes an adjustment on the rocket engine as you worm into the cockpit. You become busier than the proverbial one-armed paperhanger: uncage flight instruments, switch out circuit breakers, release lock. Then you hook up,

By JAMES L. H. PECK

"Here are the facts . . ."

■ You might well pick up a late 1954 issue of Air Trails and read a pilot's story of an action generally similar to this. The "sonic interceptor" program happens to be one of the USAF's hottest and most important projects.

Despite the Buck Rogers aspect, all the elements for this significant tactical scheme exist right today in varying degrees of workable form:

• The electronics equipments described in this narrative in an elementary and simplified fashion have been under development at Hughes Aircraft for two years. More recently, parallel projects have been undertaken by General Electric, Sperry Gyroscope, and North American Aviation.

• Several months ago it was announced that Convair had been awarded the prime contract in a spirited competition of interceptor entries submitted by most of America's leading builders of fighter aircraft, including North American, Republic, Lockheed, and McDonnell.

• Air-to-air missiles fully capable of radar homing at ranges exceeding five miles have been field-tested. AAM of a size which such a fighter plane could carry exists in the Falcon and somewhat larger Sparrow. An interceptor could carry a single, larger AAM such as the 1500-lb. Oriole and the smaller Meteor. All these missiles and others are well along in development or service-test status.

• The automatic fighter control scheme has been tested—as early as two years ago—in significant flights at Edwards Air Force Base, Muroc, Cal.

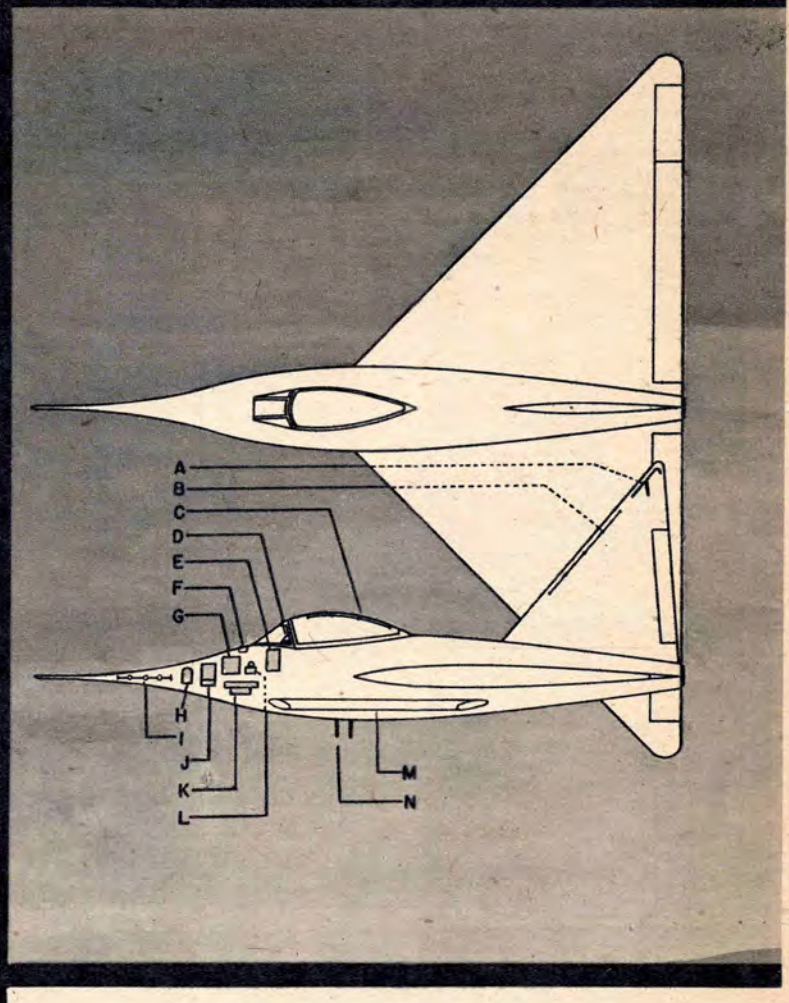
• The radar sight described here has the same general characteristics of the A-1C and J-1 fighter sights which have drawn the bead on many a MiG over Korea during the past 15 months.

• An airframe of roughly the same configuration has undergone exhaustive flight testing at Edwards AFB in the form of the Convair F-92A. And it was announced officially that the designation of the first sonic interceptor will be XF-102.

Significance:

Tactically speaking, the scheme is an operational gimmick for making a surface-to-air missile (SAM) out of an airplane and an air-to-air missile (AAM). But even if SAMs such as *Terrier, Nike, Loki,* or *Gapa* were fully operational right today, the AAM-carrying interceptor would still retain certain tactical advantages:

• This missile carrier would be able to engage the enemy farther out, attacking him from 75 to 100 miles away from his intended target. This is a vital consideration, since we can presume to be operating against atom-carrying bombers. The surface-to-air missile does (Continued on page 74)



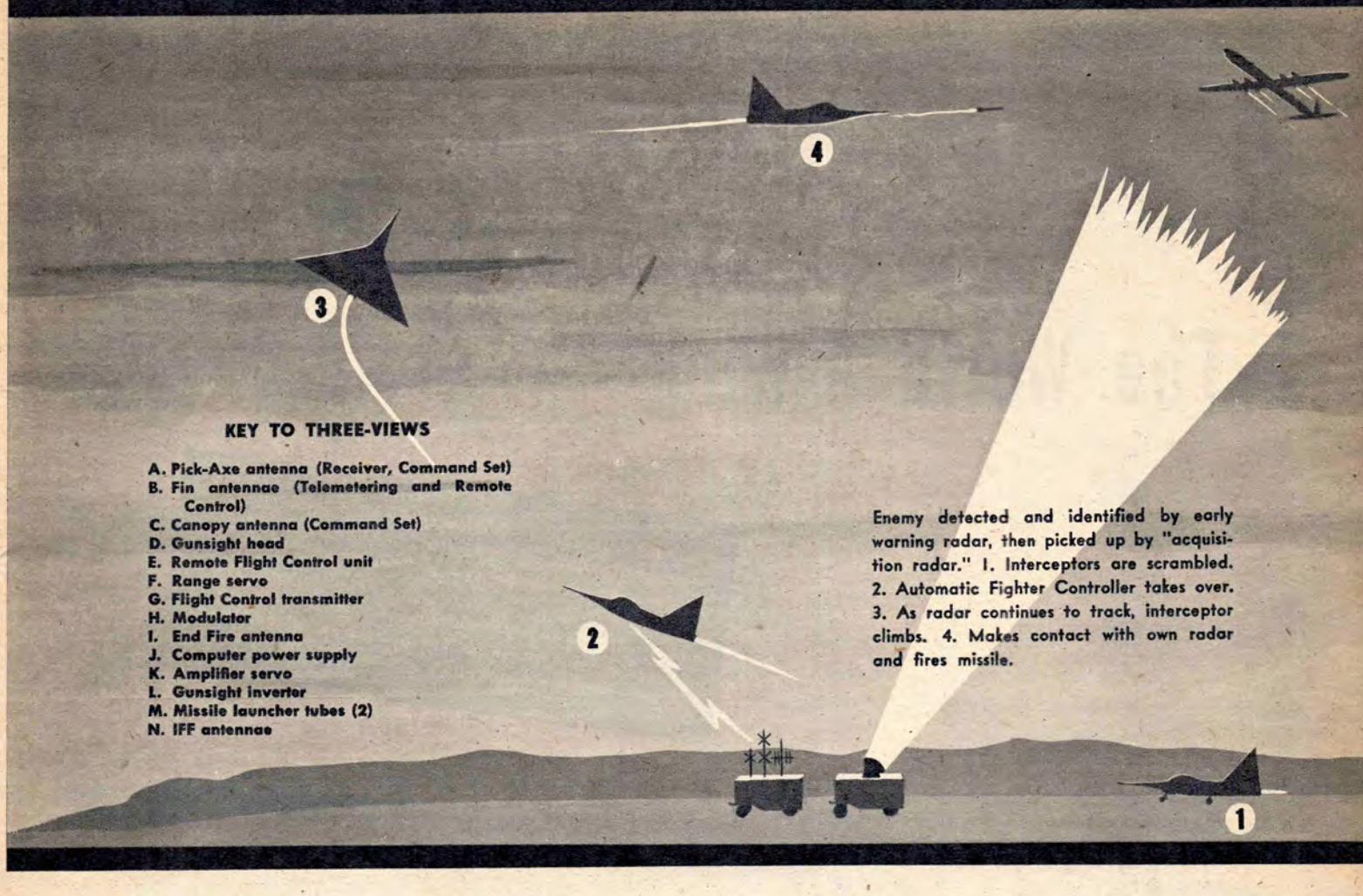
fastening the shoulder harness and safety belt. You plug the oxygen hose and radio connections into the "quick-detach" tube, then make a fast mental check-off.

To prepare for the rapid ascent to altitude, you start breathing oxygen immediately. You adjust cabin pressurization, turn on the generator, and motion to the crew chief with a thumbs-down gesture to start the auxiliary power unit (APU) that is plugged into a fuselage connection.

Your right hand holds down the starter button while your left sets the control boost and fuel selector switches. Then your left hand darts over to the battery switch as the turbojet revs up to 5 percent power. You let go of the starter: it will continue turning and disengage automatically when the engine revs up to about 18 percent power. The APU is disconnected. You move away on the taxi-out. Your buddies will follow you off at regular two-minute intervals.

The mobile control tower is just dimly visible through the late afternoon mist as you exchange a few words of radio conversation. Then you swing onto the runway and ease the throttle forward. The triangle-shaped plane accelerates. It is almost an instrument take-off, with nothing but gloom shrouding the runway up ahead.

As soon as the interceptor is airborne you retract the gear. Then you suck up the wing flaps, retard the throttle to 96 percent power, and flick on a toggle


KEY TO THREE-VIEWS
A. Pick-Axe antenna (Receiver, Command Set)
B. Fin antennae (Telemetering and Remote Control)
C. Canopy antenna (Command Set)
D. Gunsight head
E. Remote Flight Control unit
F. Range servo
G. Flight Control transmitter
H. Modulator
I. End Fire antenna
J. Computer power supply
K. Amplifier servo
L. Gunsight inverter
M. Missile launcher tubes (2)
N. IFF antennae
Enemy detected and identified by early warning radar, then picked up by "acquisition radar." 1. Interceptors are scrambled. 2. Automatic Fighter Controller takes over. 3. As radar continues to track, interceptor climbs. 4. Makes contact with own radar and fires missile.
1
2
3
4

switch marked TELEMETERING. The emergency fuel pump is switched off, and you move two switches to prime the rocket engine. At 500 feet you flip still another switch labeled AUTO, and speak into the microphone, "Baker Leader, ready for automatic."

A voice crackles in the headset, "I've got you, Baker Leader."

You fire-up the rocket engine. A high-pitched shriek merges with the low rumble of the J-57 turbojet. You're pressed against the back of the seat as the plane surges upward in a 45-degree climb.

You let go of the controls.

Now you try to relax. From here on in you are practically a passenger going along just for the ride. Technically, though, you're called a "pilot monitor." The someone else who is flying your ship is the AFC (Automatic Fighter Controller) down on the ground a few miles from the airdrome.

Wearing a headset and throat mike, this officer—who is himself a crack fighter pilot—sits attentively before a large console. He manipulates delicately with his right hand a miniature control stick that guides your interceptor as he watches the large radar scope and three lines of winking, vari-colored lights. The display he watches is the scope of the "acquisition radar" that goes into action after the hostile craft have been picked up by the larger early warning radars miles away. This acquisition radar tracks the enemy planes continuously. By maneuvering the radar blip that represents your plane on an interception course with the enemy blips, the AFC will put you in position to attack with the air-to-air missiles snuggling in the belly of your delta interceptor. Then the AFC will fly you back home.

You feel the ship bank onto a new course as the AFC vectors you by remote control toward the hostile bombers. The plane bores up through murky nimbus, then high above you see a secondary overcast of cirro-stratus. You streak into this layer at 22,000 feet. And it seems like flying through a milky white fog through which the sunlight filters dimly. About 31,000 feet you burst through into a silvery explosion of dazzling sunlight and indigo blue sky. It's just two minutes since you took off.

Down on the airdrome, Baker Two is just rolling down the misty runway. At the same console—but with an additional control stick—the same AFC who is flying your plane will "handle" this second interceptor. Another controller will fly the following two planes, and so on until the flight is airborne.

You watch the sky vault around you turn to a deeper indigo shade. At 45,000 feet it becomes navy blue. Then the firmament takes on a purple-black cast at 50,000 feet. The sun is a bright orb fairly low in the west. But to the eastward, down-sun, you can see distinctly a number of stars. You appreciate now why electronic navigation and sighting are so essential to high-altitude operations.

The interceptor levels off at 60,000 feet. The only way you know it's level is (*Continued on page* 53)

The World A-Wing

Sweden's production version of SAAB J-29 jet fighter equipped with auxiliary fuel tanks and rockets making a Jato. Service model has 5000-lb. thrust DH Ghost.

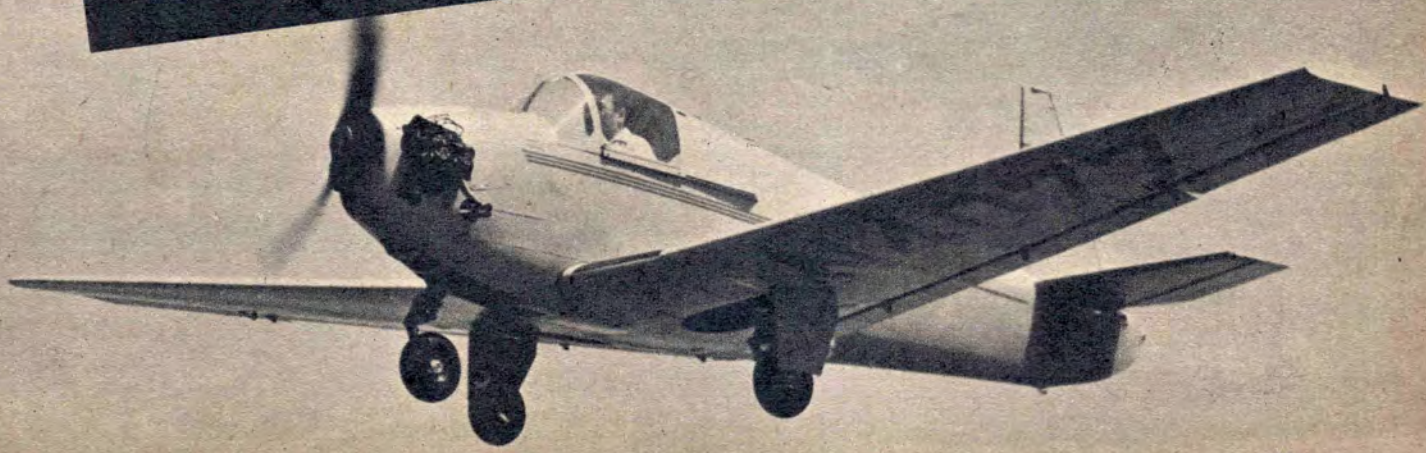
Below: Italy's popular lightplane Macchi M.B. 308, now in service with Italian Air Force as liaison plane. Inset shows racing version with streamlined windshield.

Honey Bee, built by Beecraft Associates of San Diego, Calif., a firm formed by makers of Wee Bee. All-metal single-seater with butterfly tail; 65 hp; 28 ft. span.

Hindustan HT-2, an all-metal trainer for the Indian Air Force. Except for engine, prop and instruments, all components designed and built in India. 155 mph tops.

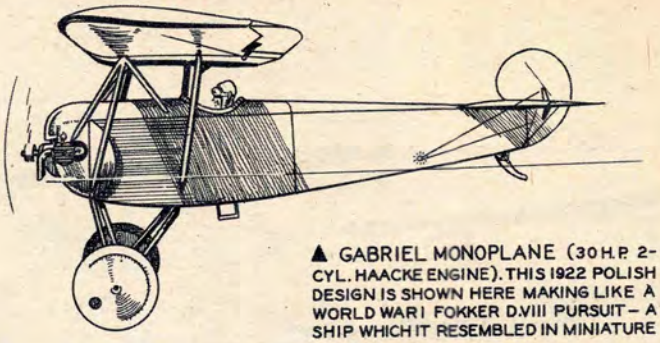
Below: SAAB 91B Safir, primary trainer of the Swedish Air Force. Powered by a 190 hp six cylinder Lycoming engine, the plane has a rated top speed of 175 mph.

Mooney M-18L. 1952 version of the popular sports single-seater. Additional streamlining increased performance. Choice of 65 hp Lycoming or Continental.

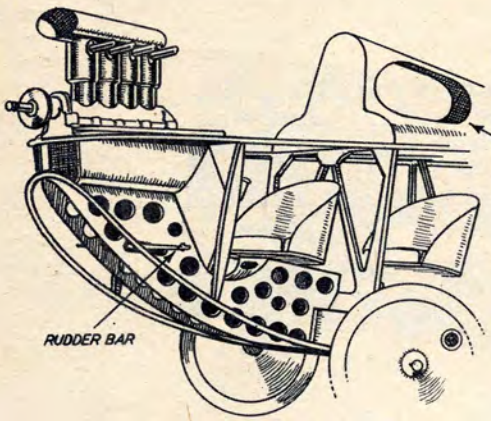


AIR PROGRESS

By DOUGLAS ROLFE

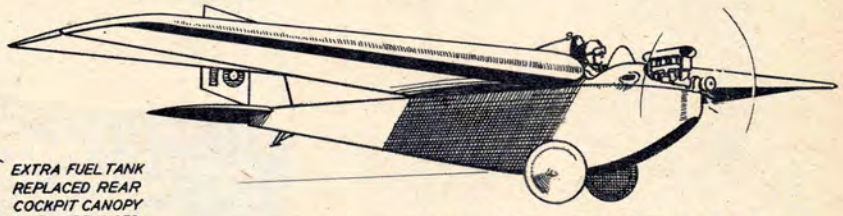


▲ GABRIEL MONOPLANE (30 H.P. 2-CYL. HAACKE ENGINE). THIS 1922 POLISH DESIGN IS SHOWN HERE MAKING LIKE A WORLD WAR I FOKKER D.VIII PURSUIT – A SHIP WHICH IT RESEMBLED IN MINIATURE

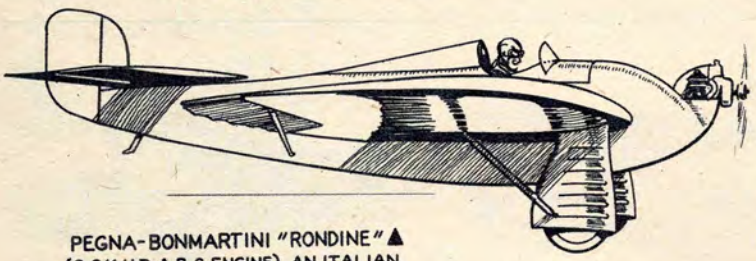


EXTRA FUEL TANK REPLACED REAR COCKPIT CANOPY WHEN ARRANGED AS SINGLE-SEATER

▲ INSTALLATION OF THE 17 H.P. SERGANT ENGINE ON THE PONCELET "VIVETTE" REVEALS SOME OF THE NOVEL STRUCTURAL FEATURES OF THIS DESIGN. THE EXTREME FORWARD POSITION OF PILOT IS WORTHY OF NOTE AS IS THE CANTILEVER ENGINE MOUNT



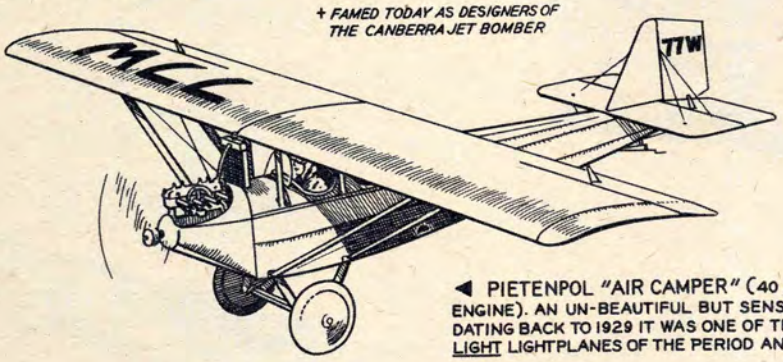
▲ PONCELET "VIVETTE" (17 H.P. SERGANT ENGINE). A 1923 BELGIAN DESIGN OF CONSIDERABLE INTEREST. – IT COULD BE OPERATED EITHER AS ONE OR 2-SEATER



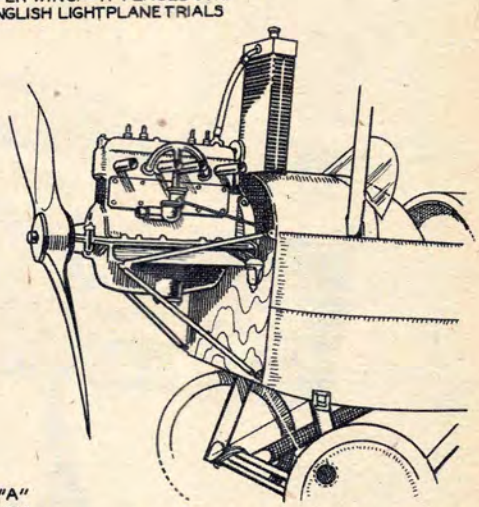
▲ PARNALL "PIXIE III" (VARIOUSLY POWERED UP TO 32 H.P.) WAS A CONVERTIBLE MONO-BIPLANE WITH SEMI-CANTILEVER LOWER WINGS AND UNBRACED REMOVABLE UPPER WING. – IT PLACED 6TH. IN THE 1924 ENGLISH LIGHTPLANE TRIALS

PEGNA-BONMARTINI "RONDINE" ▲ (2-3/4 H.P. A.B.C. ENGINE). AN ITALIAN VENTURE IN THE ULTRA-LOW POWERED FIELD AND ONLY OTHER PLANE BESIDES + THE ENGLISH ELECTRIC CO'S 1923 WREN TO FLY SUCCESSFULLY WITH THIS MOTOR

+ FAMED TODAY AS DESIGNERS OF THE CANBERRA JET BOMBER



◀ PIETENPOL "AIR CAMPER" (40 H.P. FORD "A" ENGINE). AN UN-BEAUTIFUL BUT SENSIBLE DESIGN DATING BACK TO 1929 IT WAS ONE OF THE BEST U. S. LIGHT LIGHTPLANES OF THE PERIOD AND EASY TO FLY

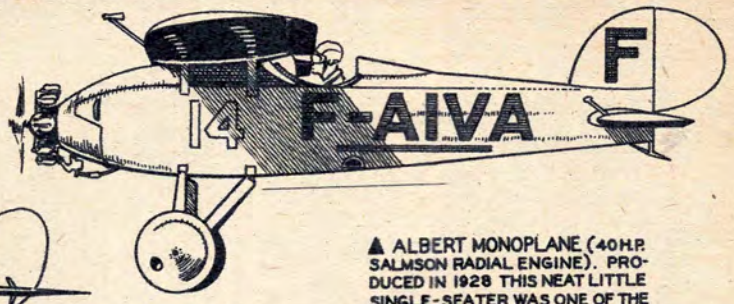


▲ DETAIL OF THE FORD MODEL "A" PIETENPOL CONVERSION INSTALLATION

HEYDAY OF THE LIGHTPLANE (1922-29)

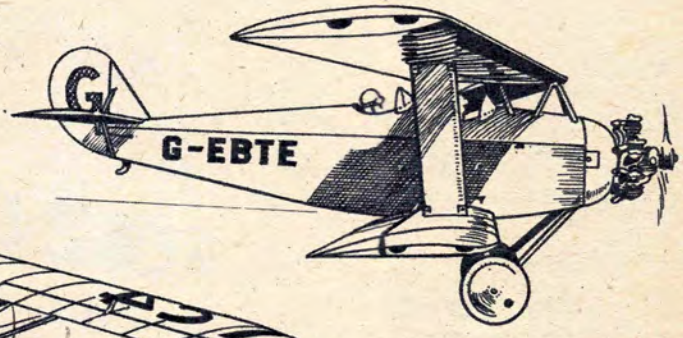
This is the third or fourth time that the pages of Air Progress have been devoted to the absorbing subject of very light airplanes. This time a variety of designs has been selected from a number of different countries and all dating from 1922 to 1929.

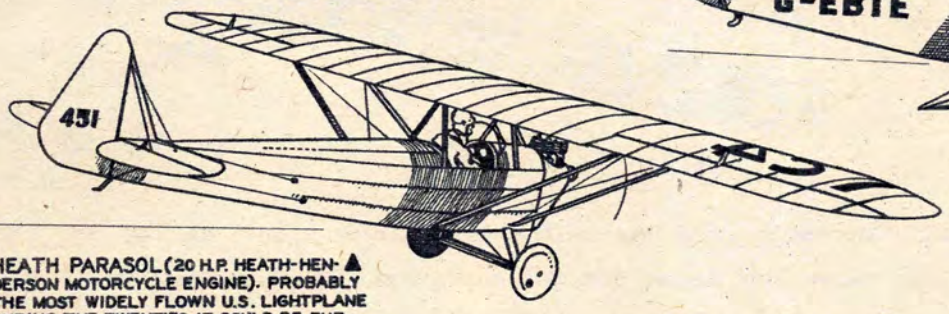
As has been pointed out in the previous series, most early airplanes were in fact lightplanes, but what came to be known as the "lightplane movement" originated in England about 1922 when quite a few leading manufacturers as well as enthusiastic amateur builders entered various designs in the Lympne Lightplane Trials. Most of these early lightplanes suffered from inefficient



▲ ALBERT MONOPLANE (40 H.P. SALMSON RADIAL ENGINE). PRODUCED IN 1928 THIS NEAT LITTLE SINGLE-SEATER WAS ONE OF THE BEST OF MANY FRENCH DESIGNS

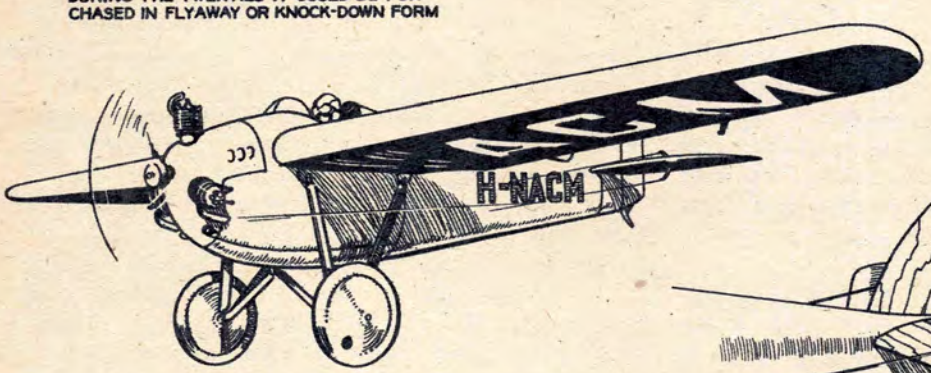
▲ FELIXTOWE C.L.A.4 (32 H.P. BRISTOL CHERUB ENGINE) BUILT BY THE MEMBERS OF AN ENGLISH LIGHTPLANE CLUB IN 1928 THIS LITTLE BIPLANE COMPARED FAVORABLY BOTH IN APPEARANCE AND PERFORMANCE WITH THE BEST TAILOR-MADE LIGHTPLANES OF THE PERIOD.





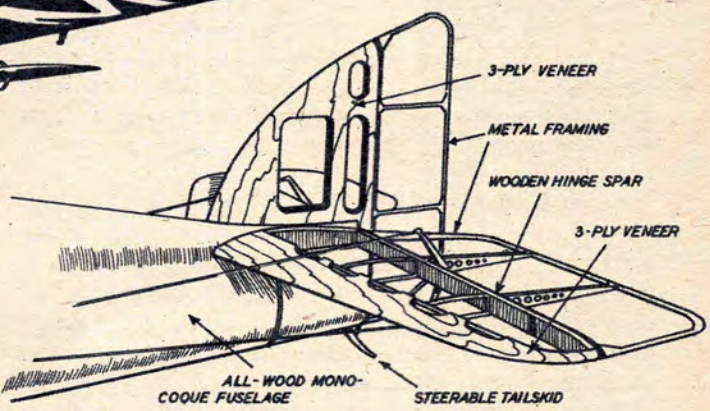
HEATH PARASOL (20 H.P. HEATH-HENDERSON MOTORCYCLE ENGINE). PROBABLY THE MOST WIDELY FLOWN U.S. LIGHTPLANE DURING THE TWENTIES IT COULD BE PURCHASED IN FLYAWAY OR KNOCK-DOWN FORM ▲

▲ PARNALL "IMP" (60 H.P. ARMSTRONG-SIDDELEY GENET ENGINE). ALSO A 1928 DESIGN THE "IMP" WAS LARGER, MORE POWERFUL, THAN THE "PIXIES"

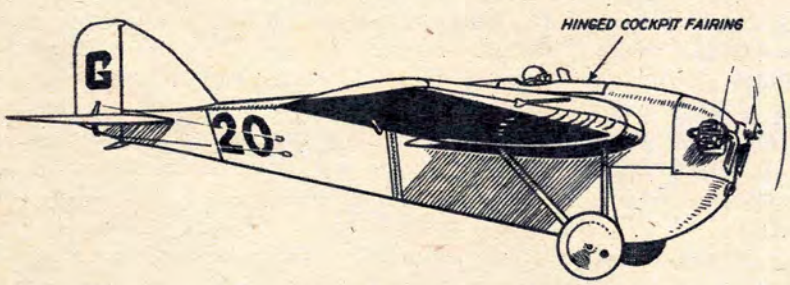


PANDER MONOPLANE (25 H.P. ANZANI ENGINE). HAILED FROM HOLLAND AND WAS NOTABLE FOR ITS EXCELLENT ENGINEERING, CLEAN LINES AND LACK OF THE VICES USUALLY FOUND IN SHIPS OF THIS SIZE ▶

DOUGLAS ROLFE



▲ DETAIL OF THE PANDER TAIL ASSEMBLY SHOWS SIMPLE WORKMANLIKE CONSTRUCTION WHICH CHARACTERIZED THIS 1925 DESIGN.

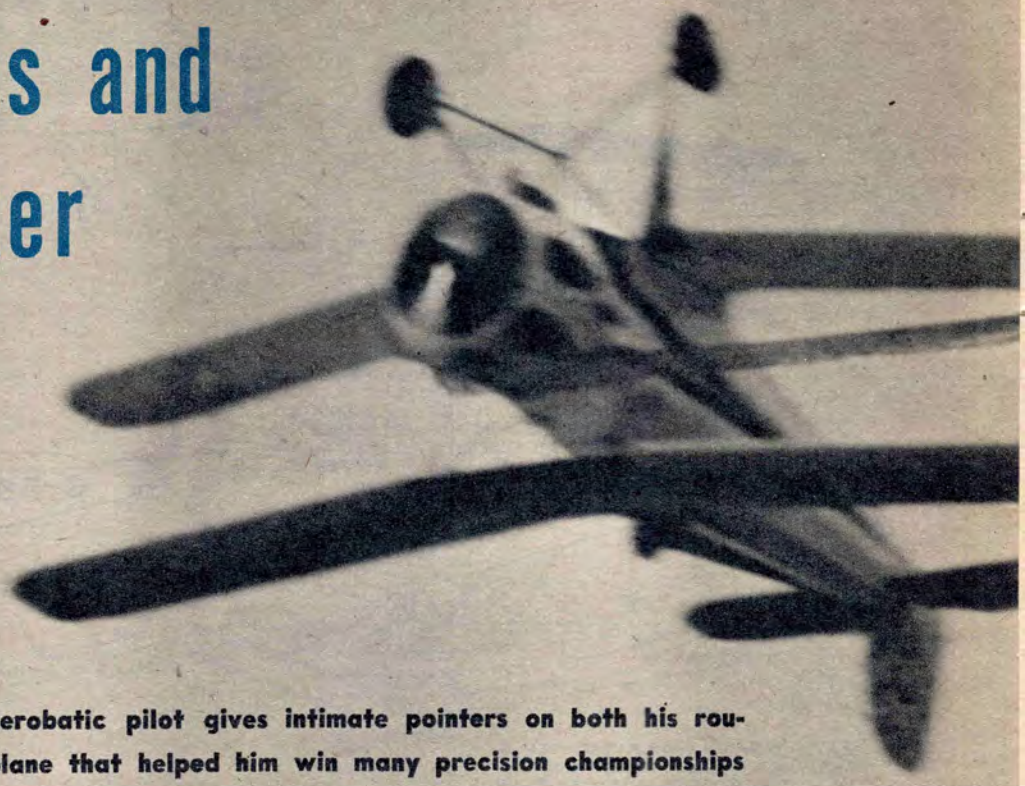


◀ R.A.E. "HURRICANE (32 H.P. BRISTOL CHERUB ENGINE). A COMPLETELY AMATEUR PRODUCTION, IT WAS ONE OF THE WINNING DESIGNS IN THE 1925 LIGHTPLANE TRIALS HELD AT LYMPNE, ENGLAND

powerplants, though flew surprisingly well if engines were functioning properly.

Judging from the different countries represented in this modest selection, the movement spread and some very neat home-made jobs appeared both here and abroad. What killed the purely amateur design was the introduction of government regulations which involved expensive stress analyses. The Pietenpol and the Heath parasols survived for a while because both were commercially produced—although the Pietenpol was actually an amateur design and garage built. This was also one of the few lightplanes to fly successfully with a converted car engine and had a satisfactory performance with two passengers, although a bit on the slow side.

Aerobatics and the Buecker



America's leading aerobatic pilot gives intimate pointers on both his routine and the little plane that helped him win many precision championships

■ The swashbuckling pilot of 20 years ago could easily tingle the spines of air show spectators simply by performing three basic aerial maneuvers—a loop, a snap roll and a spin. Not so today, however. The avid flying fan is still hungry for thrills, but in step with the technical advancements in aeronautics he expects to see the more difficult and complex type of maneuver accomplished.

Properly executed aerobatics should first be clearly differentiated from so-called "stunt" flying. The latter smacks of the reckless, daring kind of flying that is generally hazardous to the pilot and often equally dangerous to the people on the ground. True areobatics, however, are defined as the execution of aerial maneuvers with precision and safety.

A sound knowledge of aerobatic fundamentals is extremely important in the business of learning to fly. An ability to perform maneuvers with a certain degree of perfection is a great confidence builder. Aerobatics help the pilot to grasp the practical application of aerodynamics and to improve his all-round flying proficiency. And in turn the pilot will better understand the limitations of his plane, as well as his own physical and mental limitations.

In my opinion there are five basic ingredients which make up a good aerobatic exhibition of the quality required in present-day competitions or precision flying demonstrations. They are (1) safety, (2) execution of maneuvers, (3) continuity, (4) placement of exhibition, and (5) showmanship. Of these five, safety and continuity—the sequence and selection of maneuvers—are the two most important factors.

Naturally, the type aircraft flown is a major consideration in the successful accomplishment of intricate aerial maneuvers.

The ideal airplane should be able to perform clean snap rolls up to a double or two-and-one-half turns. Its cruising speed should be slow, preferably under 130 mph. A light wing loading is favored for both conventional and inverted maneuvers. The plane with the light wing loading may be able to outside loop within a radius of 175 feet, while one with a heavier wing loading may require a radius of 350 feet for the same maneuver. In competition the plane that can maneuver fast has the advantage. Time is of the essence when you pack about 35 different maneuvers into a routine lasting no more than seven minutes.

The aerobatic plane must have positive aileron control. If it's a biplane double ailerons are imperative. (When you start a roll with a biplane having a single set of ailerons, the control wing attempts the roll, but the ineffective wing, without the aileron, tends to keep on flying.) Also, the plane's engine power should be relatively high for the plane's weight. A good rate of climb is necessary.

"What did the G-meter read during that outside loop, Pop?" asks ten year old Bevo Jr. of his famous father. Bevo Sr. is 38.

Climax of an aerobatic exhibition by Bevo Howard and the Buecker. While two attendants hold poles with ribbon fastened between, Bevo comes down in inverted position cutting the tape with his prop. Executed at low altitude, this maneuver requires a fine degree of precision flying—and very steady nerves.

Bevo Howard

Precision pilot par excellence

■ Beverly E. Howard, more familiarly known as Bevo, is hailed by the aviation industry as one of the greatest precision pilots of the modern era. Winner of six national and international aerobatic flying championships, which he describes in the accompanying article, Bevo Howard has probably made more money at what he calls his "hobby" than any other present-day professional exhibition pilot.

Since 1933 when Bevo flew his first exhibition with an old Waco F at the dedication of the Walterboro, S. C., airport, it is estimated that he has flown before more than five million spectators at all major air meets in this nation, and including several large air shows abroad in which he participated during a tour of Europe two years ago.

Part of his seven-minute aerobatic routine includes such maneuvers as a series of slow rolls in a 360-degree circle, inverted 360-degree turn, hammerhead stall and turn, four and eight point sectional rolls, conventional and inverted snap rolls ranging from a three-quarter to a double roll and fractions thereof, vertical figure eight (inside and outside loop), snap rolls on top of a loop, square loops, snap rolls from knife flight, vertical snap roll and spin recovery, outside loop, etc.

About precision flying Bevo has this to say: "Aerobatics take a lot of thought both on the ground and in the air. All maneuvers must first be carefully planned—I cannot overemphasize the importance of thorough planning."

by BEVERLY E. HOWARD

A little engineering will turn 'most any single-engine production model in the 125 to 450 horsepower range into a highly maneuverable aerobatic ship. For many years I used a stock Cub with considerable success. It was a J-2, powered by a Continental 37 hp engine. The only modification I made was to install an inverted system for continuous fuel flow when I flew upside down.

It was in this J-2 airplane that in 1938 I executed the first outside loop ever flown in a lightplane. Then the following year, 1939, I flew the same plane to victory in the lightplane division of the Freddy Lund Memorial Trophy contest at the Miami All American Air Maneuvers.

I won the lightplane championship at Miami again in 1940 and 1941, flying another stock Cub both years. It was a 1939-model J-3, powered by a Lenape 50 hp engine with an inverted system. The only other difference between this plane and a standard production model was the grade "A" fabric that covered it and the close rib stitching.

In 1941 the lightplane division was abolished in favor of one aerobatic competition open to single-engine planes of any horsepower. Still partial to Cubs, I ordered a modified J-3 from Piper and late in '41 the factory delivered it. Approximately seven feet had been clipped from the wingspan. Ailerons were standard size and were the regular hinge-type, very effective in aerobatics even though they required greater pressures. A Continental 85 hp engine, equipped with fuel injection and an inverted system, was tied to the nose.

Miami's annual winter aviation classic, suspended during World War II, was resumed in 1946 giving me the first chance to see what I could do with the clipped-wing Cub in competition. I ended up by winning the international aerobatic title for that year. Then a few months later, out of a clear blue sky so to speak, I realized a (*Continued on page* 59)

Control Line Carrier Scale:

F8F-2 Bearcat

A "natural" for Navy's Carrier Event, this U/C nifty can also win for you in flying scale

By S. CALHOUN SMITH

■ Last of the piston-engined Grumman fighters, the Bearcat represented the ultimate in carrier fighters. Using the big R-2800 series Pratt & Whitney 2250 hp engine, the Bearcat's take-off and climb performance was the hottest of any prop fighter. In a demonstration before the public a few years ago the Bearcat was airborne in 115 feet and climbed to 10,000 feet in 100 seconds.

The F8F-2, capable of nearly 500 mph top speed, carried a variety of armament. Four .50 cal. machine guns or four 20-mm cannon were mounted in the wings. Two 1000-lb. bombs and four 5" HVAR Rockets could be carried under the wings. Various size auxiliary tanks could be slung under the fuselage belly for longer range.

Built at the end of World War II, this worthy successor to the Wildcat and Hellcat did not see any action but joined the fleet immediately after the war. The Bearcat has served well, and the few left are used for training at reserve bases. Some were sold to the French Air Force. Air Show fans will best remember the Bearcats used by the famous "Blue Angels" Navy Aerobatic team during 1947-1949.

The stubby fighter makes an excellent scale control-liner. Our model was scaled directly from Grumman drawings, so accuracy is assured. Scale is 1 in. = 1 ft., giving the model 35½" wingspan. The drawings show the model set up for the Navy Carrier Event and this extra gear makes a fairly heavy ship. The original model weighed 45 oz. This may seem high, but the big O&R .60 in the nose hauled it around handily and, most vital, furnished the power needed for good slow flight handling.

The slow flight phase of carrier flying is felt to be the most important, so the model was designed for best efficiency here. The ship is balanced exactly at the 25% chord line, stabilizer and elevator areas are increased slightly and the thick lifting airfoil of the big ship is retained. Line leads are angled back slightly, bellcrank is mounted low in fuselage and outer wing tip is weighted to make sure the model stays out on the end of the lines when flown slowly in any wind. Here again weight helps, because the

model just bores through the wind and flies steady as a rock.

The plans include many scale items that were not on the original model, but could be added if a strictly flying scale job is to be built. There are a few changes that should be made for this type of flying. First of all the big .60 engine would not be needed since battery and ignition system weight would be eliminated if glow plug engine was used. The smallest engine usable would be .29 displacement, with .35-.45 preferred. Tail weight should be kept as low as possible. Built-up 1/16" sheet covered tails and omission of hook gear in tail would solve this problem, so that balance could be retained with lighter engine. Landing gear wire could be 3/32" dia. instead of ⅛" dia. shown. Further lightening could be achieved by using 3/32" skin on fuselage rather than ⅛" shown.

Construction follows standard practice, having Fireball type wings, crutch, former and planked fuselage and solid sheet tails.

Start with the wing since this must be joined to the fuselage before the latter can be completed. Make up the wing skins from 6" wide 1/16" sheet if obtainable. If not, butt-edge-cement 3" wide sheets to needed width. Mark off rib positions on what will become the wing top skin. Cement ribs in place, starting at tips and working toward center section. Make wings in two halves. Bevel one edge of leading edge stock to fit against skin and rib ends snugly, and cement in place.

When dry, bevel the other edge to follow curve of rib ends on lower surface. Cut out ⅛" plywood spars and bend landing gear to shape. Slide gear through spars and bolt with "J" bolts, then slide spars into place in rib slots. This will join wing halves. Add ¼" triangular gussets at spar-rib intersections as shown. This will add considerable strength at these highly stressed points. Add ¼" plywood bellcrank mount along front spar rear. Build up ½" sheet blocks at center section around leading edge. These will be carved later to form air scoop in wing leading edge. Note that ½" sheet on top does not extend all the way to wing center. This block will butt against plywood side in fuselage, so make sure the space between ends of blocks is correct.

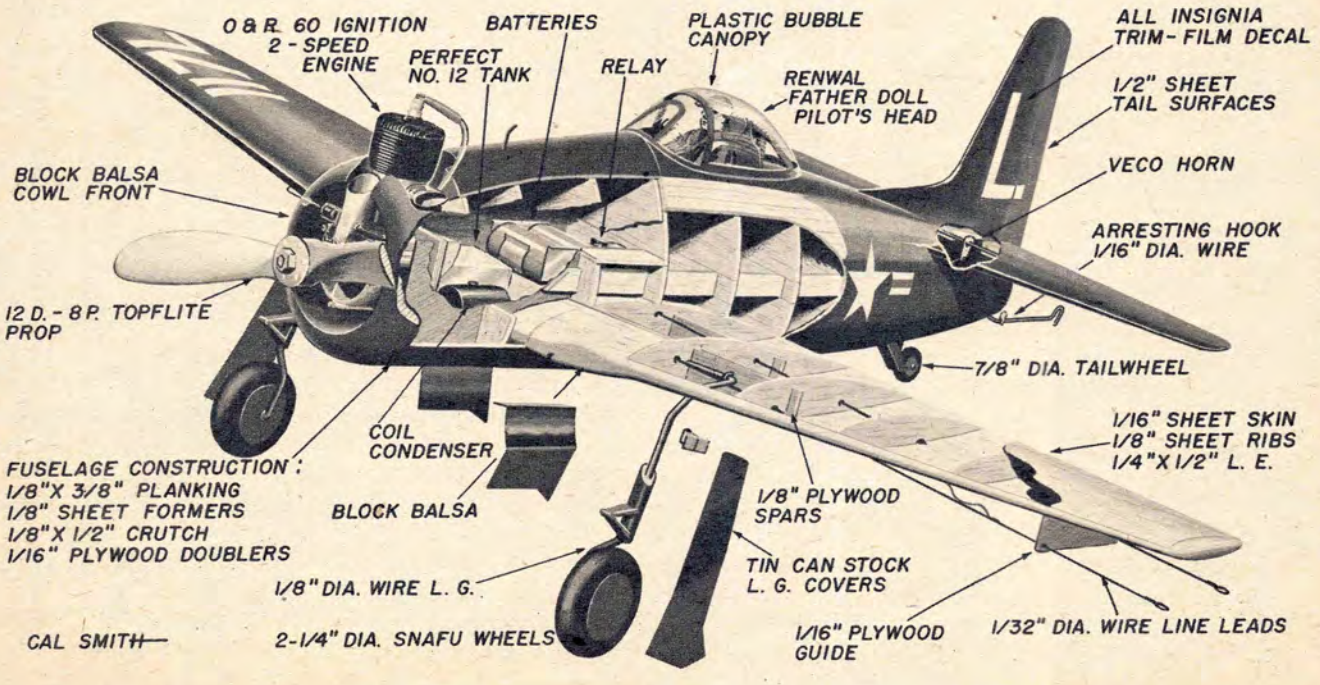
Next, install bellcrank and line leads. Check to see that travel is free through rib holes. Now the bottom wing skin can be added. Notch to clear landing gear wire and punch for line leads. Check wing by sighting spanwise to see that no warps are built in.

Add tip blocks and lay wing aside to dry thoroughly before adding to fuselage later.

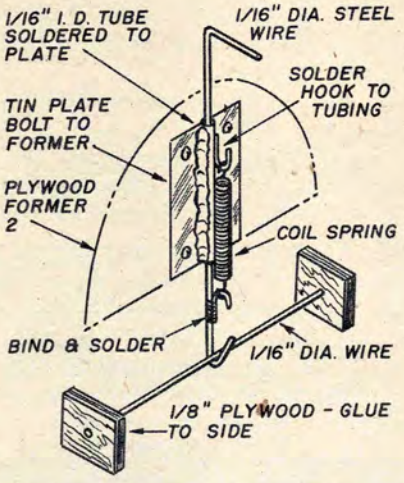
Now fuselage construction is begun. Build ⅛" x ½" crutch over the plan top view. Add cross pieces at stations 5-10 only. While the crutch is drying cut out the formers, firewall and plywood sides. Join the firewall to the plywood with brads and Weldwood glue. Add ¼" triangular hardwood gussets behind firewall. Make sure this unit is dead square and that width is exact so the fit between crutch will be accurate. Add top halves of formers 5-10 to crutch next. Cement ⅛" sheet canopy base in place across former 5 to 6. Cut length accurately for joining to former 4 later.

Now cement about four ⅛" x ⅜" planking strips in place along fuselage top from cockpit back to former 9T. This will hold the structure rigid when removed from board. Add ⅛" x ¼" strips along formers 9-10 to form stabilizer mount.

When crutch assembly and plywood box front section are dry, they can be joined. Use cement liberally and clamp crutch ends along outside surfaces of plywood box. When dry place accurately cut spacers inside box to maintain proper width. These can be

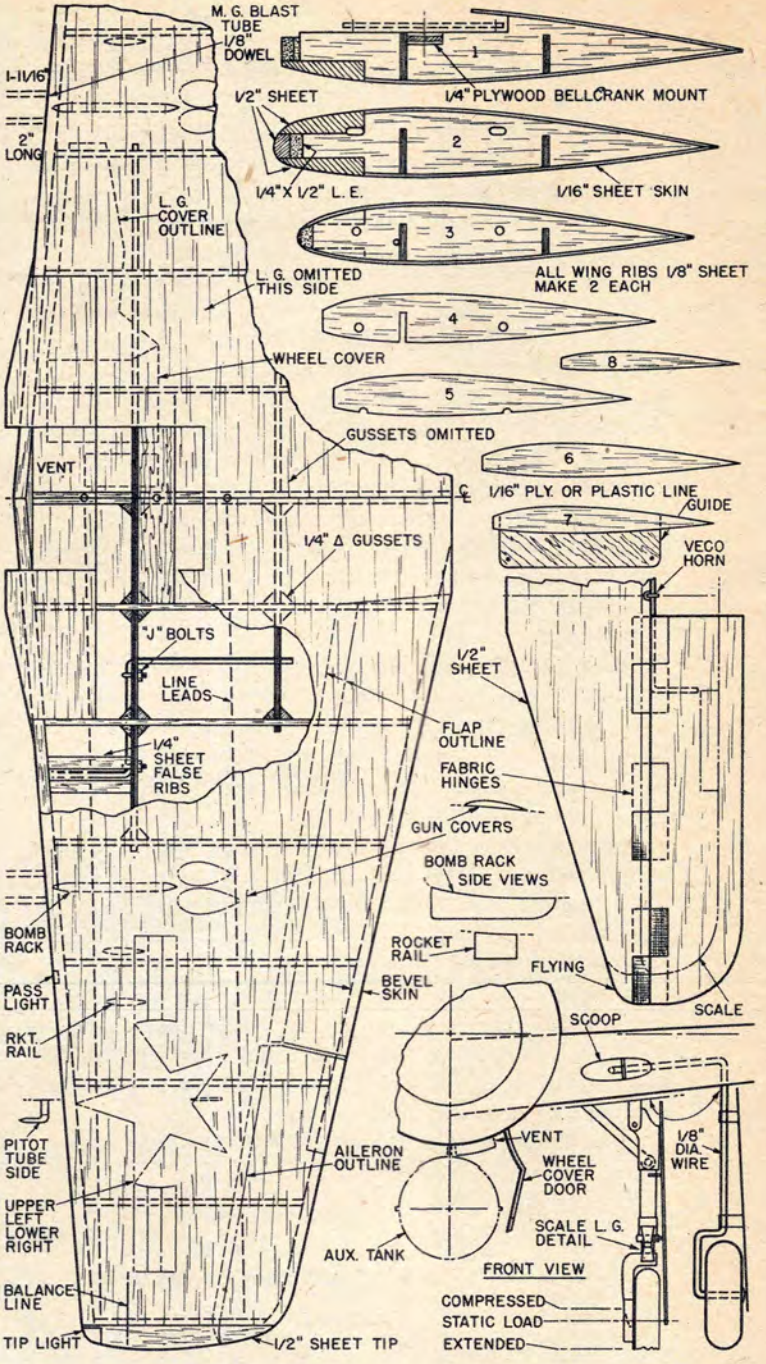


Photographed at the Grumman airport on Long Island, Smith's F8F won plaudits of Bearcat's designers, flyers.


1/16" I. D. TUBE SOLDERED TO PLATE
1/16" DIA. STEEL WIRE
SOLDER HOOK TO TUBING
TIN PLATE BOLT TO FORMER
PLYWOOD FORMER 2
COIL SPRING
BIND & SOLDER
1/16" DIA. WIRE
1/8" PLYWOOD - GLUE TO SIDE

The removable cowl is held to fuselage by a cowl latch of the type used on team racers.

For carrier operations use a .60-size powerplant; for just scale flying without 2-speed, .35-.45 will do the job nicely.



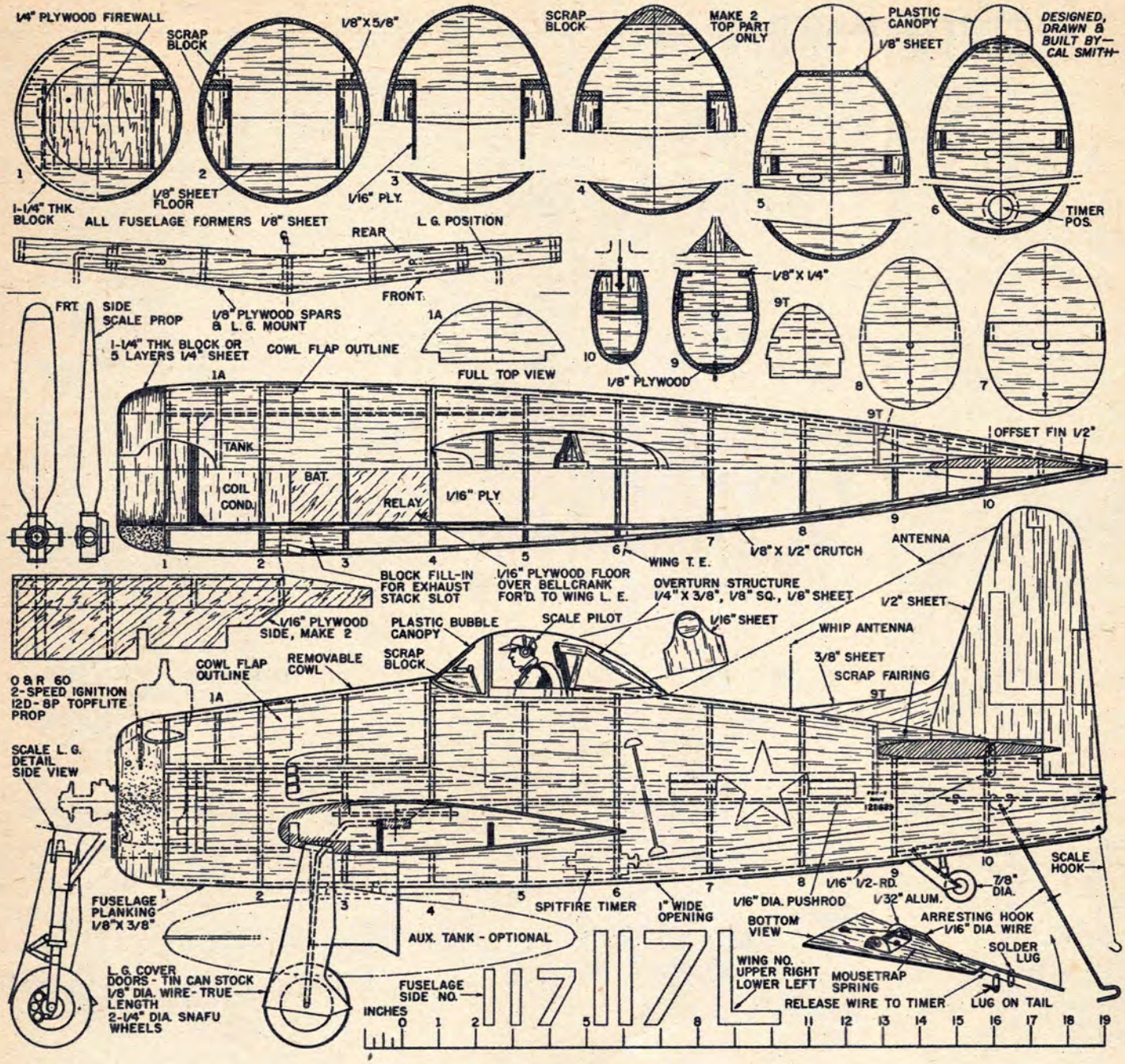
removed later. Now proceed to add side halves of formers 1-4 and top 4 to front top portion of fuselage.

The removable front cowl section is built right on the main fuselage structure. First add the ⅛" strips along the outside edges of the plywood from former 1 to 4. Lay strips of waxed paper over these strips and pin down another ⅛" strip over this, adding top part of formers 1-4 over these strips. Add several planking strips to top for rigidity.

With the top portion of the fuselage construction partially completed, next tackle the bottom section. Add section of formers 5 and 6 below crutch above wing. Lay wing in place, check for fit of leading edge through notches in plywood sides. See that top wing skin and blocks clear plywood sides. Check by viewing spanwise for proper angle of incidence. When everything checks correctly cement wing to crutch and formers and plywood sides.

Make up the arresting hook gear and cement 1/16" plywood mount to bottom of crutch at tail. Now add lower formers from nose to tail. Check carefully 3-6 for proper space off wing bottom, since variation in wing surface may make adjustment necessary. Now add several strips of planking along bottom for strength while handling.

Proceed to finish off interior of fuselage bottom before continuing with planking. Add ⅛" sheet floor at bottom edge of plywood sides from former 1 back to wing leading edge. Fill up any space below leading edge and floor. Install pushrod through formers.



Bend end to fit bellcrank but leave rear end long for bending to horn later. Install Spitfire fuel cut-off timer at former 6. Only alteration needed is 1/32" hole drilled through knob for release wire. Set timer for about one minute. Run 1/32" dia. release wire through formers; leave long at tail end for adjustment later.

Tailwheel mount can be made from ⅛" plywood. Bind tailwheel strut wire to plywood and cement in place at former 9-10.

This completes inside work except for accessory section behind firewall which can be taken care of later. Proceed with the planking job. Add several parallel strips along sides above wing, then work from top toward these strips, adding first one side and then the other, tapering ends to fit snugly. Follow same procedure on bottom. Cut tapers carefully where strips meet wing skin. The removable cowl can be planked later when taken off main structure. Add scrap block over former 4 under canopy front.

Rounded portion of engine cowl front can be made of block if the thickness is available, or built up of ¼" sheet laminations.

Carve off excess cement between planking and then sand entire fuselage smooth. Cut slot in bottom at tail for arresting hook travel. While fuselage planking dries thoroughly the tail surfaces can be made. The stabilizer and elevator are made from medium weight ½" sheet; taper to ¼" thick at tips. Details and complete construction on full-size plans.

Picture Report on the *Nationals*

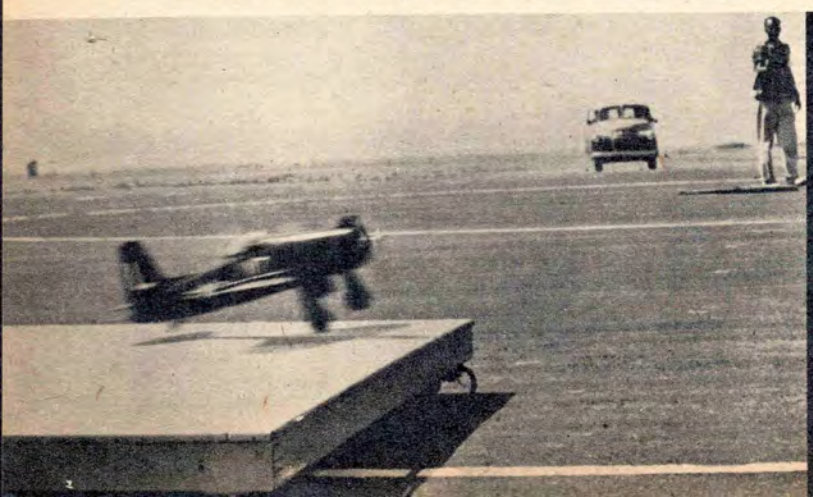
California's "Earthquake" Nats was very well run, produced some real high-caliber competition

Russ Nichols, AMA Director, presents the Testor Best Finish award to John Tatone, San Francisco, whose Tipsy Jr. was tops.

Delbert D. Swartz, Burbank, Cal., flew Wasp powered 0-49 in Half-A free flight scale; was formerly rubber job. Top points were 309 by Louis R. Culler, Torrence, Cal.

Indicative of many fine C/L scale: 6 ft DC-3 by Edward Morgan, 21, Las Vegas. Anderson .65's; has seats, passengers, lights.

Cal Smith gets F8F off model carrier deck; judges said model (see pg. 28) had most realistic take-offs, landings. Donald E. Yearout, Albuquerque, N. M., won with Corsair. Mr. and Mrs. Ray Randall took A/2.



Informal Half-A speed races run off nights in work hangar have become a Nats highlight. On dolly is reduced Golden Rod by Curtiss Stevens, Stockton, Cal., 8.5 in. span, Wasp. Other by Jimmy Hannah, Tuscaloosa, Ala.; 9 in. Wasp.

New National Champion! Joe Foster, Jr., 25, (left) San Jose, Cal., (512 pts.) member of Championship Oakland Cloud Dusters Club (1522 pts.). Presenting championship trophy to Joe is Herold M. Harter, secretary of National Exchange Clubs whose Long Beach club sponsored Nats. Runners-up to Cloud Dusters were Frisco Vultures (1520 pts.), the USAF's "L" team (1472), Thermal Busters (1460) and Inglewood Flight Masters (1455).

Senior Champion for 1952 is Barry Robertson, Pacoma, Cal., who racked up 331 points (left); junior top man was Don Puskarich, Oildale, Cal., 199 points. (Barry should not be confused with Harry Robertson of Phoenix whose tailless towline set new senior record.) Age champions, all from Cal. this year, were selected on new basis which pitted old against young.

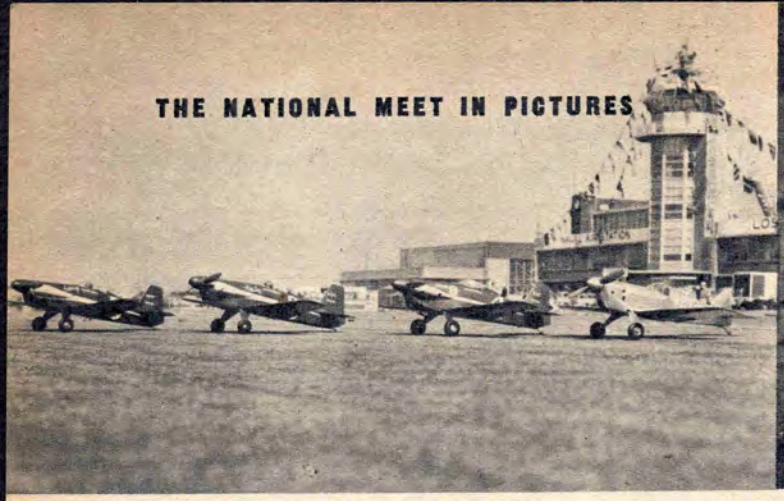
Tommy Baker, shown with the Mrs., came from Wheelus AFB, Tripoli, to compete on AF team. Won three 2nds and 4th in speed, jet, stunt.

Call it what you will: the 21st National Championship Model Airplane Meet, the "West Coast Nationals," the "California Nats," the "Earthquake Contest" (California was still quaking when contestants were arriving)—it was a competition that the 750 participants will long remember. All events were run "of, by and for" the model builder. AT's own Dick Everett was meet manager assisted by Keith Storey and a host of outstanding West Coast model leaders; sponsorship was by the Long Beach Exchange Club and all facilities were furnished by the Navy and its Los Alamitos Naval Air Station. A goodly number of entrants made the trek "over the mountains"—about one third were from outside the Pacific Coast region. The meet was distinguished by the presence of the Secretary of the Navy, Dan Kimball. Helicopters were used to spot far-flying models. Things moved along at such a hot pace the station theater caught fire during the presentation of awards!

George Gardner (rt) with top Pan American winners. Class A-B PAA-Load junior-senior—C. Merrill, 16:54.2; open—F. Uyematsu, 23:53.4. R. E. Latham, A/2 Clipper Cargo, 17.25 oz.; Mal Alberts, Rubber PAA-Load, 194.1 sec.

Best in radio control! Alex Schneider of San Francisco Mustangs club, got 261.8 points to garner top honors in R/C. He used Rockwood's 5-channel system and a Spitfire .65. William Deans, 2nd, 238.3.

THE NATIONAL MEET IN PICTURES



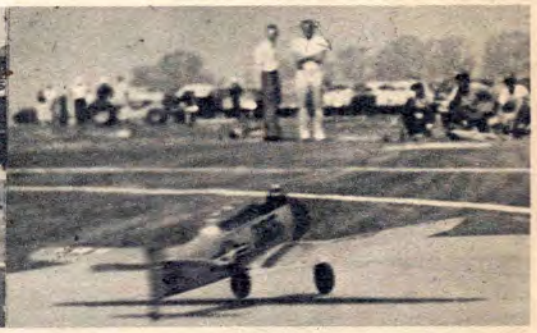
Team race event won by Granger Williams, Huntington Park, Cal., with metal-covered Minnow (2nd from rt.); other Cosmic Winds shown are his, too. Brother Larry entered the slick non-scale all-metal Torp .29 at right.

This is the 10.75 lb. Vampire Mark I flown by Howard R. Yonkers, San Mateo, Cal., in C/L scale. Howard is member of Peninsula Twisters. Powered by a Red Head Dyna-Jet engine, model spans 5 ft. Excellent finish; flew fairly well.

Typical gabfest (from lt.); Howie Robinson, Ohio, Al Lewis, "AT", Joe Bilgri, Cal., Bob Wiele, Cal., Bill Kresek, San Valeers.

S. Sgt. George Mueller, Marana AFB, won A speed with 131.77 mph using a K&B. Previously model set new record of 134.27 at the Air Force World Wide Championships.

Crashed—alas! This twin-engine "Cat" by L. W. Hess of Salt Lake City Active Modelers had 2 Torp. 19's; weighed 5½ lbs.; 54 in.



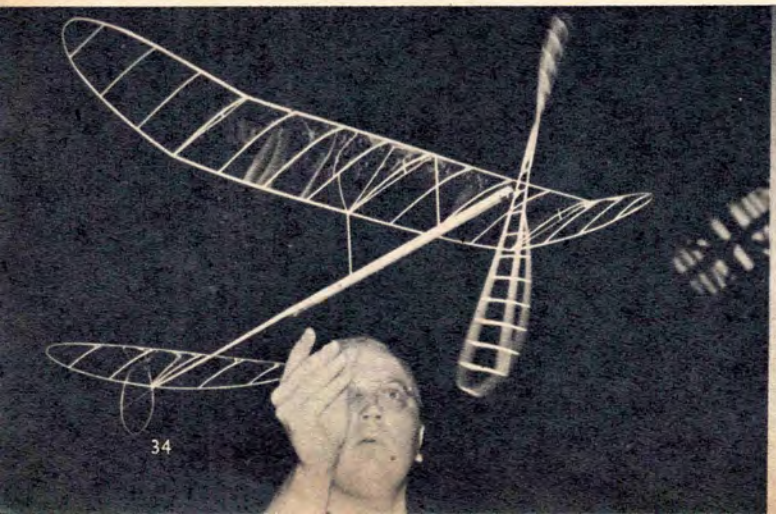
Nat. Champ Joe Foster with record-setting 1:13.6, 57 sq. in., .75 oz. (avec clay) indoor glider at the Santa Ana airdock.

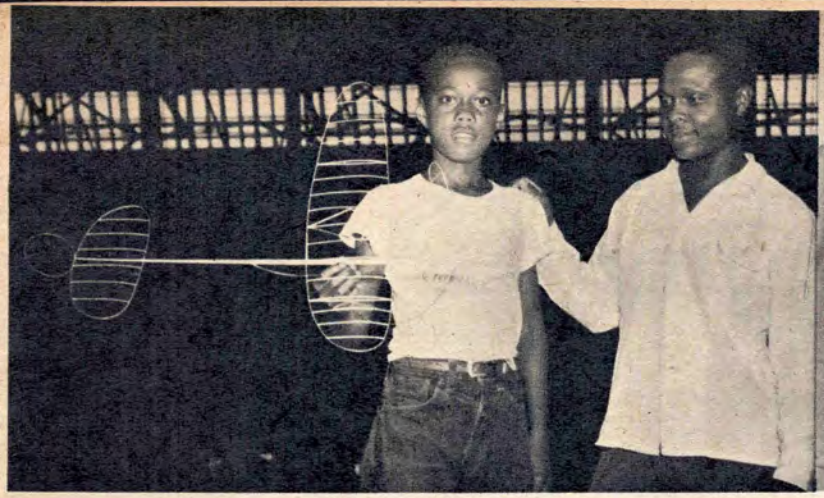
Adm. T. S. Combs, Chief Navy Bureau of Aeronautics approves N2S-4 Stearman with Spitfire .65 flown by A. W. "Shorty" Wright (rt.), Las Vegas, Nev. Capt. Dean (lt.).

J. L. Eckstein, San Lorenzo, Cal., was second in carrier event with this Berkeley AT-6 and first man to start operations "off the deck."

Just back after 2 years in Korean waters, Navy's CPO S. W. Stanwick was 4th in open stick with 23:39.4. Then Stan built Jasco job overnight and did 18:05.8 for 3rd in A/2 open PAA-Load. He's from Boston.

Cheers for the gals! (Mrs.) Violet Hoyt, right, high point feminine trophy winner. She did best jet time—144.23! (Mr. M. G. Hoyt was 4th in jet flying.) Janice Wood placed second and flew in a majority of the control line events.





Proud Pappy is Frank Cummings, Jr. (rt.), former national champ, whose son Frank, III, won jr. indoor stick with 22:51.8. After 4-year layoff Big Frank returned to indoor competition, took the indoor cabin honors with 21:47.2.

From left: Keith Storey, assist. contest director; Dick Everett, meet mgr.; George Aldrich, winner of the Jim Walker stunt trophy with 379.66 pts.; Capt. E. J. Drew, Los Alamitos NAS CO and Sgt Taibi, F/F director.

Mighty fine group of military men: USAF contingent with trophies won. Project Officer Lt. Harry Vogler, Jr. (rt.); Capt. Drew (lt.), USN.

Top flying scale model in control line circles: Great Lakes Trainer by Thomas Dean, Corpus Christi, Tex. Wt., 2.75 lbs.; Dooling .29; 40 in. span. Dean totaled 280.90 pts.

Bill (Wotta Wasp!) Atwood with '48 cabin model, helped by wife Mildred and son Ronald, 13. Bill won open stick: 27:52.

The wide open spaces and exceptionally fine weather were two features that participants in the California Nationals will never forget. Retrieving was easier than ever before at a Nats because of the flat countryside and presence of Navy helicopters. Calm mornings with plentiful thermals after daybreak fogs (smogs, haze—you name it) resulted in some tremendous free flight performances. In many events, unless you had at least 23 minutes total time, you just weren't in the running. Every afternoon the wind came up so most of the flying was accomplished during a.m. hours. As a result most flyers spent the post-noon period tinkering, repairing, swimming or shooting the breeze—all good for "contest nerves."

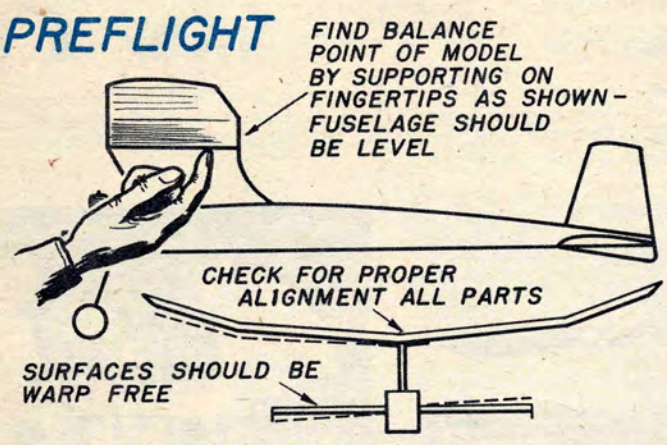
At last we saw a change in indoor models! Henry Jex, left, and Dick Baxter entered this in the cabin event, claimed the 40 in. hot air balloon fulfilled all rule requirements. Caused much comment, even arguments. Eligible?

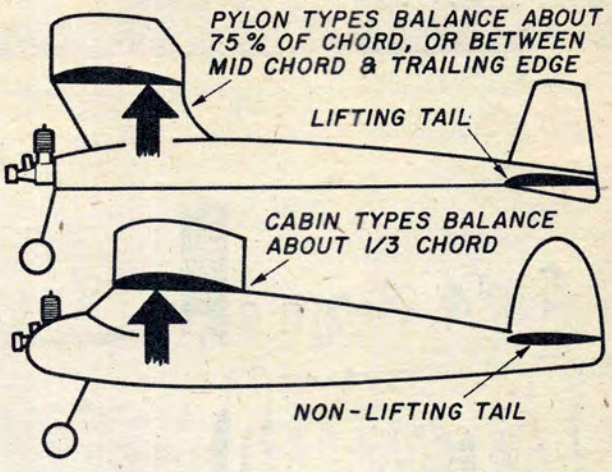
The U.S.S. SMALLFRY
THIS SIMULATED AIRCRAFT CARRIER DECK AQUAINTS MODEL PLANE BUILDERS WITH SPECIAL PROBLEMS INVOLVED IN THE REAL CARRIER FLYING.
A NAVY FIGHTER PLANE Must
1. BE ABLE TO TAKE OFF AFTER A SHORT RUN.
2. HAVE A HIGH ORIGINAL RATE OF CLIMB TO RAPIDLY INTERCEPT ENEMY BOMBERS.
3. " GREAT STABILITY DURING SLOW SPEED FLIGHT REQUIRED IN LANDING IN A SMALL SPACE.
4. " A TAIL SECTION STRONG ENOUGH TO WITHSTAND THE STRESS OF ARRESTED LANDINGS.
5. THE ARRESTING GEAR USED IS THE SAME TYPE EMPLOYED BY Capt. EJ IN THE FIRST SHIPBOARD LANDING OF AIRCRAFT ABOARD THE U.S.S. PENNSYLVANIA ON JAN. 18, 1911.

AIR-MODEL MANUAL

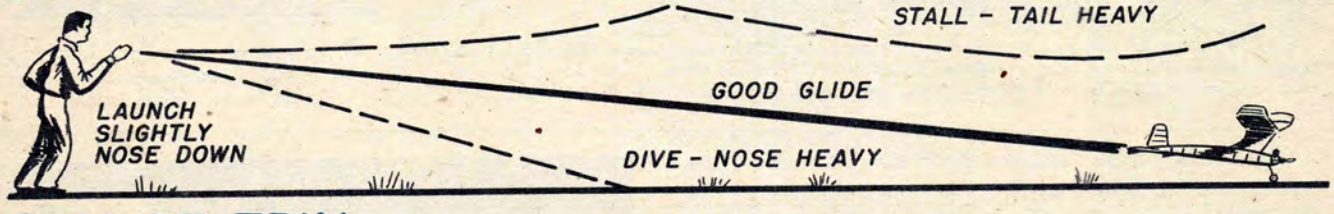
ADJUSTMENT OF FREE FLIGHT GAS MODELS

PREFLIGHT

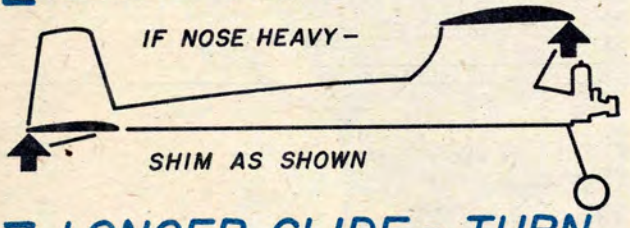

FIND BALANCE POINT OF MODEL BY SUPPORTING ON FINGERTIPS AS SHOWN - FUSELAGE SHOULD BE LEVEL
CHECK FOR PROPER ALIGNMENT ALL PARTS
SURFACES SHOULD BE WARP FREE

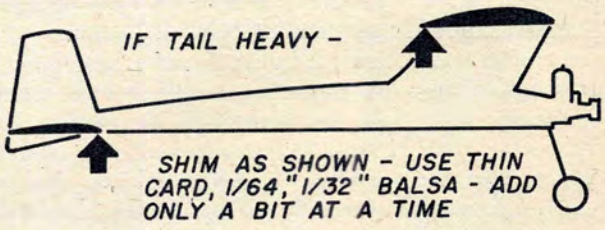

PYLON TYPES BALANCE ABOUT 75% OF CHORD, OR BETWEEN MID CHORD & TRAILING EDGE
LIFTING TAIL
CABIN TYPES BALANCE ABOUT 1/3 CHORD
NON-LIFTING TAIL

1 TEST GLIDE

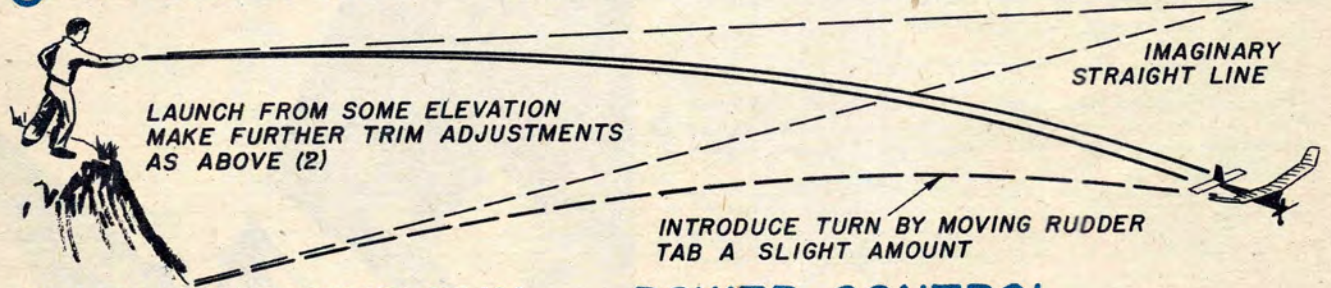


2 GLIDE TRIM

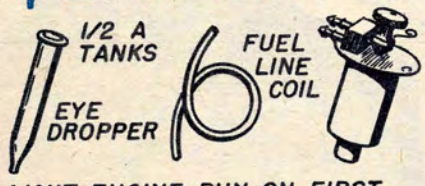




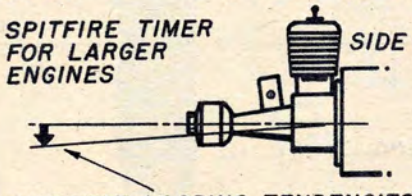
3 LONGER GLIDE - TURN

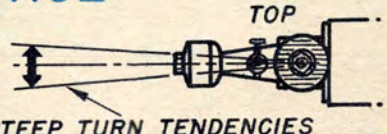

IMAGINARY STRAIGHT LINE
LAUNCH FROM SOME ELEVATION MAKE FURTHER TRIM ADJUSTMENTS AS ABOVE (2)
INTRODUCE TURN BY MOVING RUDDER TAB A SLIGHT AMOUNT

4 LIMIT ENGINE RUN — POWER CONTROL



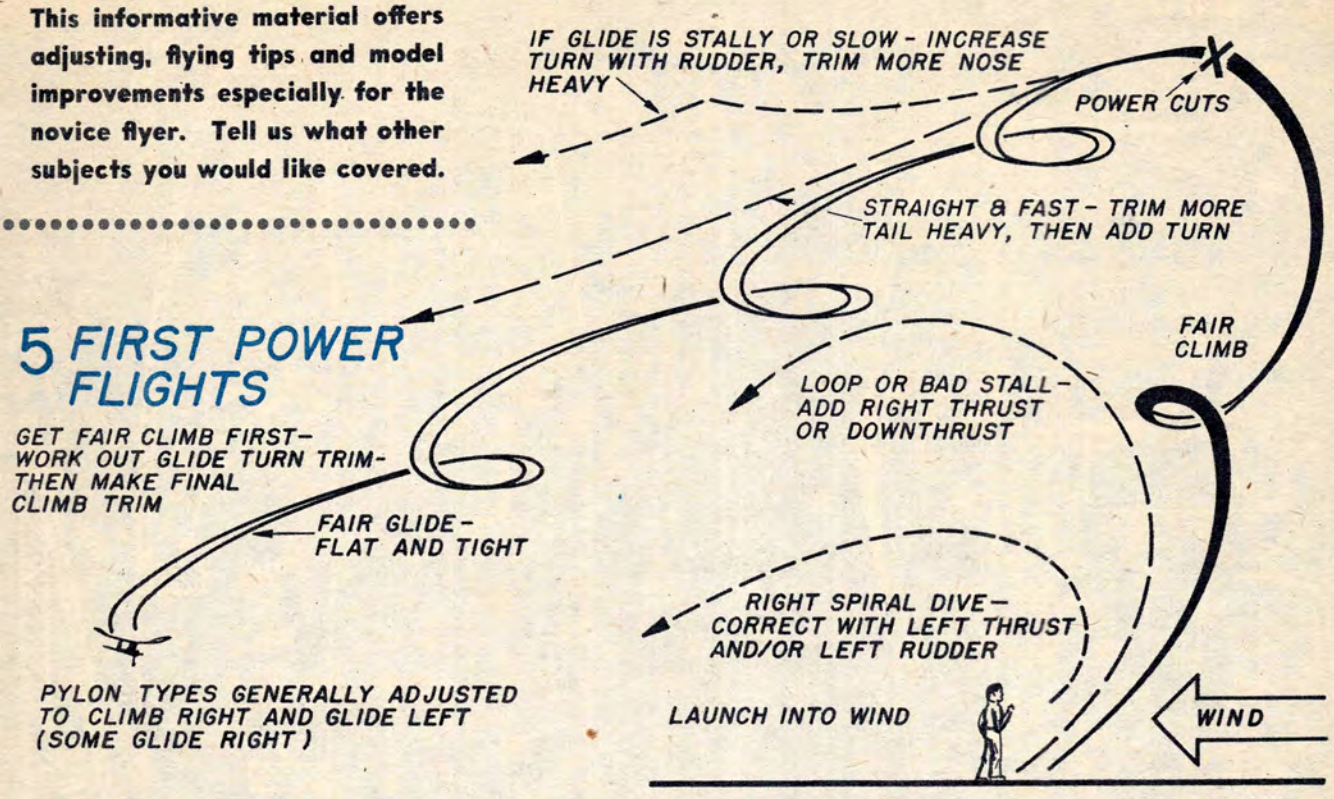
LIMIT ENGINE RUN ON FIRST FLIGHTS TO 5 - 10 SEC.



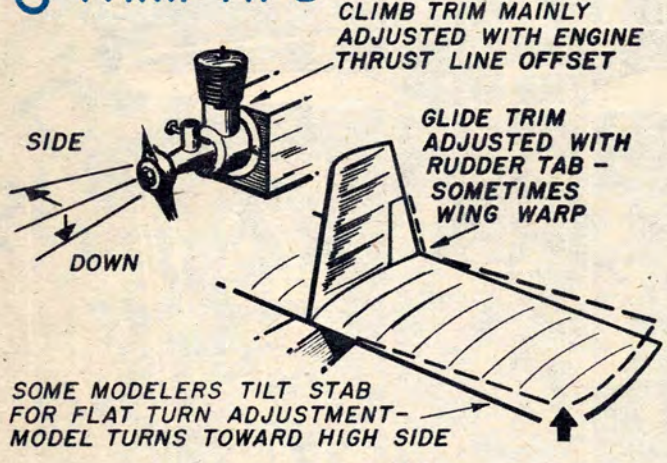


This informative material offers adjusting, flying tips and model improvements especially for the novice flyer. Tell us what other subjects you would like covered.

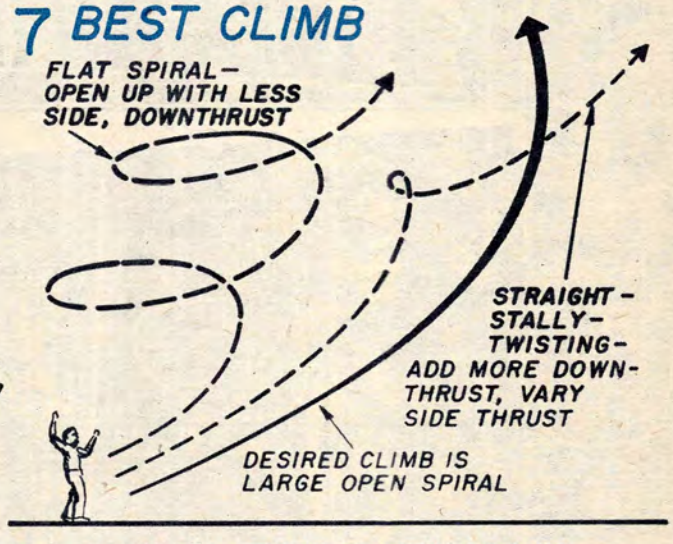
5 FIRST POWER FLIGHTS


IF GLIDE IS STALLY OR SLOW - INCREASE TURN WITH RUDDER, TRIM MORE NOSE HEAVY
POWER CUTS
STRAIGHT & FAST - TRIM MORE TAIL HEAVY, THEN ADD TURN
FAIR CLIMB
LOOP OR BAD STALL - ADD RIGHT THRUST OR DOWNTHRUST
GET FAIR CLIMB FIRST - WORK OUT GLIDE TURN TRIM - THEN MAKE FINAL CLIMB TRIM
FAIR GLIDE - FLAT AND TIGHT
RIGHT SPIRAL DIVE - CORRECT WITH LEFT THRUST AND/OR LEFT RUDDER
PYLON TYPES GENERALLY ADJUSTED TO CLIMB RIGHT AND GLIDE LEFT (SOME GLIDE RIGHT)
LAUNCH INTO WIND
WIND

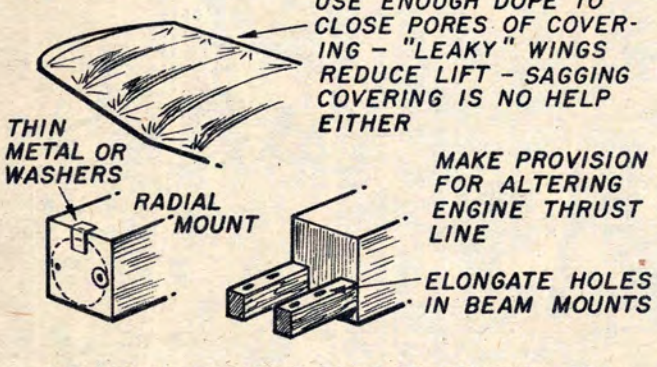
6 TRIM TIPS


CLIMB TRIM MAINLY ADJUSTED WITH ENGINE THRUST LINE OFFSET
SIDE
DOWN
GLIDE TRIM ADJUSTED WITH RUDDER TAB - SOMETIMES WING WARP
SOME MODELERS TILT STAB FOR FLAT TURN ADJUSTMENT - MODEL TURNS TOWARD HIGH SIDE

7 BEST CLIMB

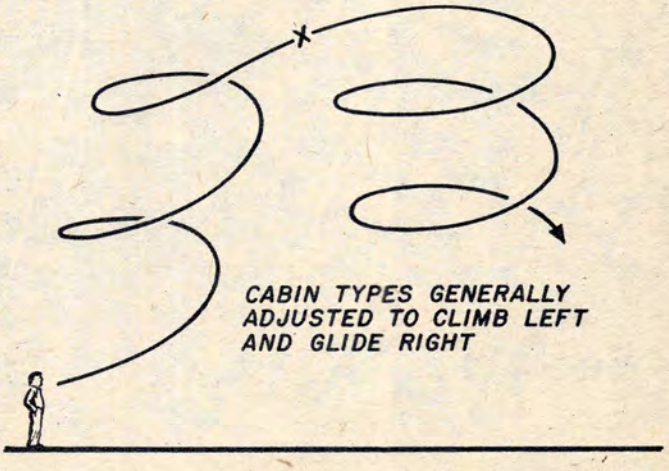

FLAT SPIRAL - OPEN UP WITH LESS SIDE, DOWNTHRUST
STRAIGHT - STALLY - TWISTING - ADD MORE DOWN-THRUST, VARY SIDE THRUST
DESIRED CLIMB IS LARGE OPEN SPIRAL

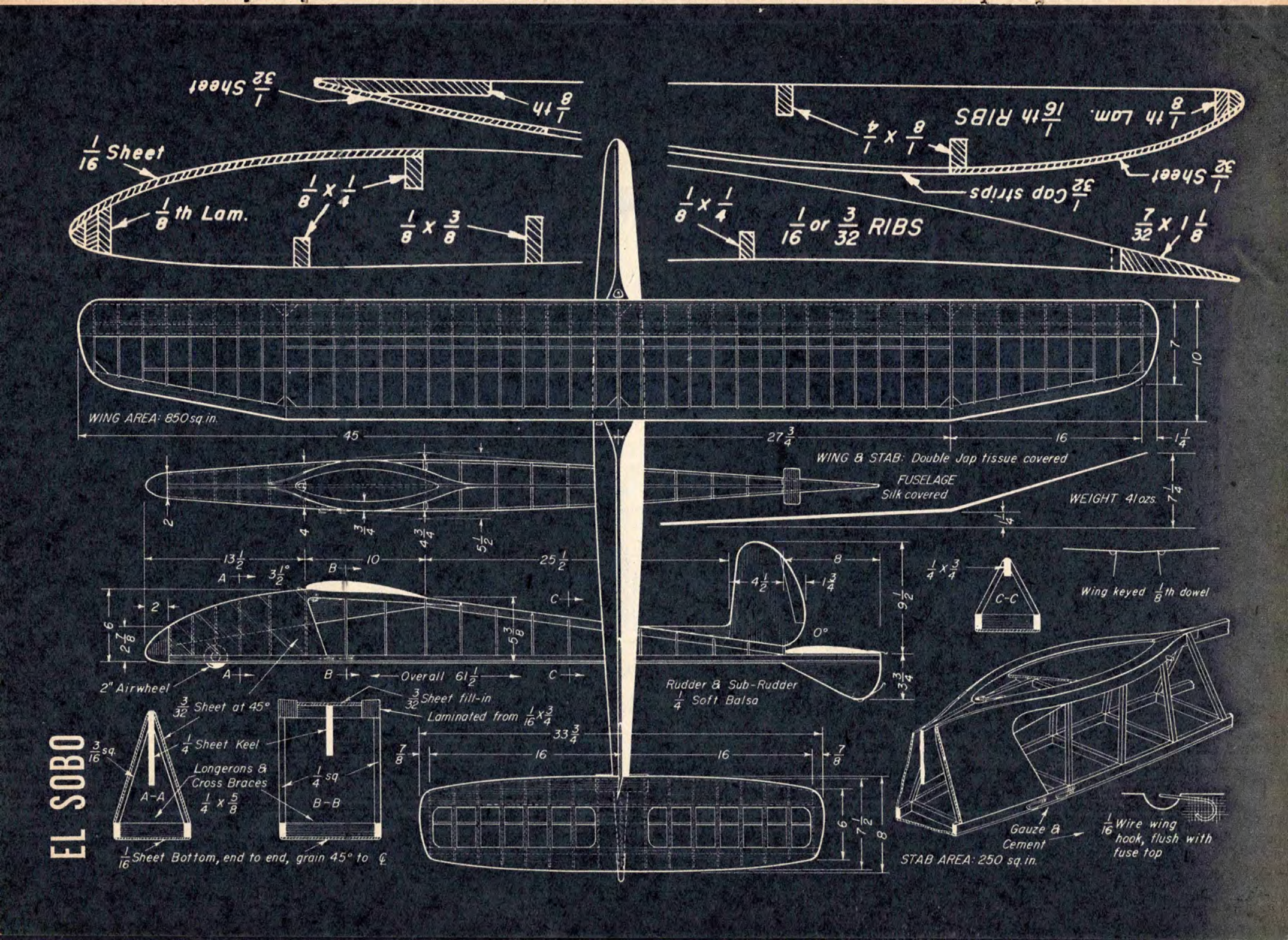
8 DESIGN TIPS


USE ENOUGH DOPE TO CLOSE PORES OF COVERING - "LEAKY" WINGS REDUCE LIFT - SAGGING COVERING IS NO HELP EITHER
THIN METAL OR WASHERS
RADIAL MOUNT
MAKE PROVISION FOR ALTERING ENGINE THRUST LINE
ELONGATE HOLES IN BEAM MOUNTS

USE PROP RECOMMENDED FOR ENGINE - FLY WITH SAME TYPE ALWAYS - CHANGING PROPS ALTERS THRUST - SO CLIMB TRIM WILL HAVE TO BE CHANGED

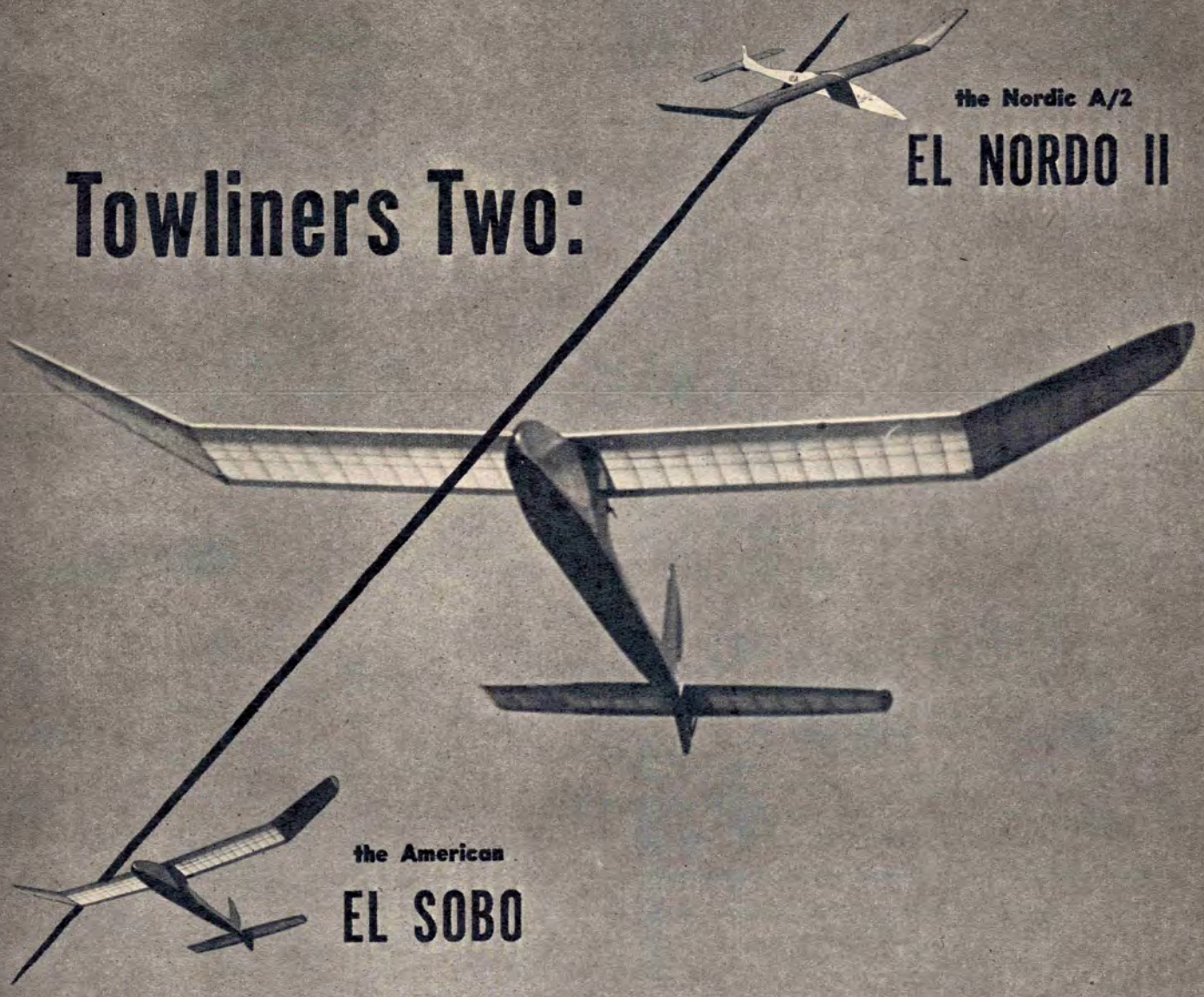
9 CABIN TYPE FLIGHT




EL SOBO
1/16 Sheet
1/8 th Lam.
1/8 x 1/4
1/8 x 3/8
1/8 th
1/32 Sheet
1/8 x 1/4
1/32 Cap strips
1/16 or 3/32 RIBS
1/8 th Lam.
1/16th RIBS
1/32 Sheet
7/32 x 1 1/8
WING AREA: 850 sq.in.
45
27 3/4
16
1 1/4
10
7
WING & STAB: Double Jap tissue covered
FUSELAGE
Silk covered
WEIGHT 41 ozs.
7 1/4
2
4
3 1/4
4 3/4
5 1/2
13 1/2
A
3 1/2°
B
10
25 1/2
C
2
6
2 7/8
5 3/8
A
B
Overall 61 1/2
C
2" Airwheel
8
4 1/2
1 3/4
9 1/2
0°
3 3/4
1/4 x 3/4
C-C
Wing keyed 1/8 th dowel
Rudder & Sub-Rudder
1/4 Soft Balsa
3/32 Sheet at 45°
3/16 sq.
1/4 Sheet Keel
Longerons & Cross Braces
1/4 x 5/8
A-A
1/4 sq.
B-B
3/32 Sheet fill-in
Laminated from 1/16 x 3/4
33 3/4
16
16
7/8
7/8
9
7 1/2
8
1/16 Sheet Bottom, end to end, grain 45° to ℄
Gauze & Cement
1/16 Wire wing hook, flush with fuse top
STAB AREA: 250 sq.in.

Towliners Two:

the Nordic A/2
EL NORDO II



the American
EL SOBO

By
DICK
EVERETT

■ The Europeans have long excelled as towline specialists, and this type of model is by far the most popular over there. One picture in an English magazine prompted us to try to find out why we were not doing as well. The picture showed a Norwegian with a model on tow, with the towline perpendicular to the ground and the model directly overhead. How do they do it?

Our tests proved very interesting, since one of the first things we found out was that all theory in regard to placement of tow hooks was definitely on the safe side and that a lot could be done to get better towing.

We discovered that the tow hooks could be moved back until they were directly under the center of gravity. Exact placement on the lateral axis was found to be a cure for a tow which consistently slid off to one side. The original model soon became loaded with tow hooks, reminding one of a pincushion and making it hard to remember which tow hook to use. The model was then towed until a full 200-foot-plus altitude was realized with a 200-foot tow line. The plus side being the stretched Nylon line.

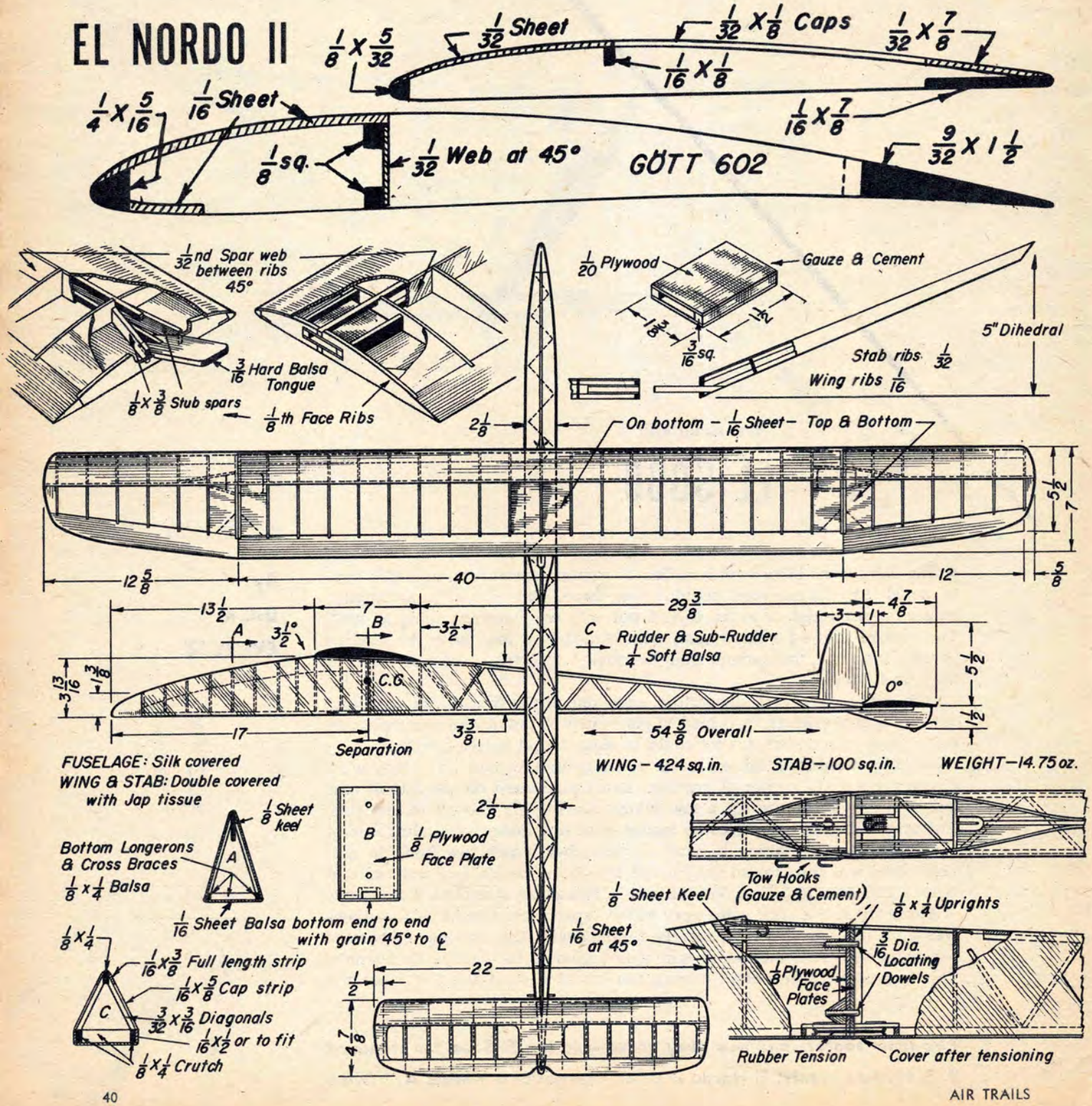
Along about this time some very bitter experiences taught us that there was a lot more to this than merely running with the towline. It became necessary to watch the model with quick glances to observe its altitude. This is especially important during the initial part of the tow since the

Two little soarers and how they grew—use the El Sobo for standard U. S. towline events; El Nordo II is for international Nordic A/2 flying

model is getting stabilized and assuming its own attitude. When using offset tow hooks set on C.G. line as in this case, the model must be launched in a yawed attitude because the combination of side hooks and rudder set for circle in the same direction tends to skew the model through the air in a yawed attitude; if you don't, it will very easily slide into the ground.

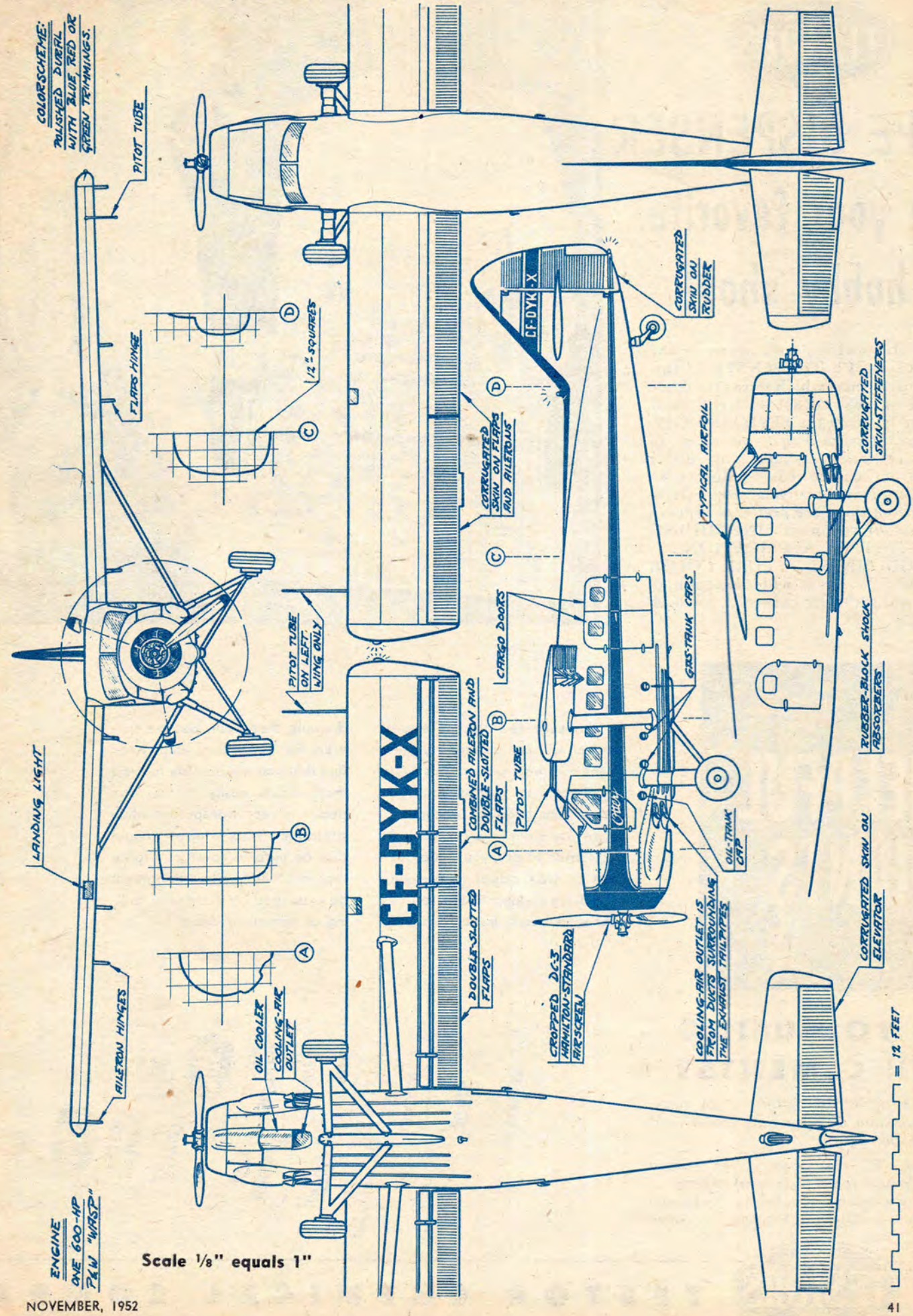
One other lesson we learned the hard way is to throw the line away if the model persists in diving when the line is taut. The models tow so fast with the hooks set as described that you just can't seem to run fast enough to catch up with them. This happened to us when our model hooked in under tow. For some reason or another we didn't realize what was going on at the time, but after the model decked and splattered two and two were added together.

To get an idea of what we went through, the following took place before a model which would really fly was developed. The first model was of large span and short coupled. This ship towed well on lines up to 100 feet long but started to oscillate when the wind was up or the lines were longer. First thoughts as to a possible cure resulted in a pod and boom job almost twice as (*Continued on page 75*)



de Havilland DHC-3 "Otter"

By BJORN KARLSTROM


COLORSCHEME:
POLISHED DURAL
WITH BLUE, RED OR
GREEN TRIMMINGS.
PITOT TUBE
FLAPS HINGE
12" SQUARES
D
C
B
A
LANDING LIGHT
AILERON HINGES
OIL COOLER
COOLING-AIR
OUTLET
PITOT TUBE
ON LEFT
WING ONLY
CF-DYK-X
CORRUGATED
SKIN ON FLAPS
AND AILERONS
COMBINED AILERON AND
DOUBLE-SLOTTED
FLAPS
PITOT TUBE
DOUBLE-SLOTTED
FLAPS
CARGO DOORS
CROPPED DC-3
HAMILTON-STANDARD
AIR-SCREW
CHIEF
GRIP
CF-DYK-X
CORRUGATED
SKIN ON
RUDDER
TYPICAL AIRFOIL
GRIP
GRIP
GRIP

Look for the new

TESTORS

DOPE DISPENSER in your favorite hobby shop!

Choose the colors you want from TESTORS DOPE DISPENSER . . . the self-vending display which shows the complete line of TESTORS 15c DOPE. And remember to insist on TESTORS DOPE — *by name!* It costs *a little* more, but is worth *a lot* more . . . that's why model builders from coast to coast—fellows who take pride in fine craftsmanship — have made Testors dope *the preferred dope* on the market. If you want FINE HIDING POWER . . . EASY APPLICATION . . . FILM TOUGHNESS . . . PURE COLOR BRILLIANCE . . . in a wide selection of popular and authentic colors . . . *you want TESTORS.*

HELPFUL HINTS

Of the very few things Testors Cement will not adhere to, one of them is wax paper. This fact is definitely to your advantage during your building procedure. When you want to lay cemented parts aside to dry, you can place them on wax paper to prevent them from sticking to the top of your work bench. Instructions and drawing sheets can also be covered for protection; and you'll find that you will be able to read these sheets easily as the wax paper is very transparent when stretched. Wax paper should also be used to cover any table tops or other furniture that might be damaged by accidental spilling of cement or dope.

ARE YOU USING BOTH CEMENTS?

FORMULA "A" is *extra fast drying* for quick, easy construction of lightweight models and for on-the-spot repairs.

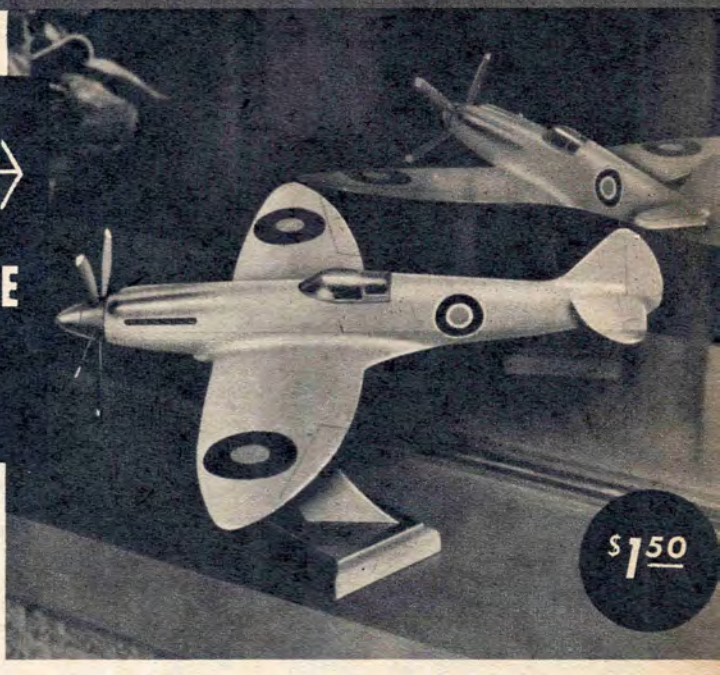
FORMULA "B" is *fast-drying* . . . the *strongest* for balsa or hardwood . . . for metal to metal . . . for metal to wood. It is your best bet for general work. Both available in 15c and 25c tubes.

TESTORS TESTOR CHEMICAL COMPANY

BUILD THESE POPULAR DISPLAY MODELS

Your display model collection won't be complete without this history-making headliner from World War II. It's a true-scale beauty that's easy to build ... sleek in appearance ... thanks to molded balsa parts and Testor's exclusive Key-Lok assembly. Dimensions: wingspan—17-1/2"; overall length—16".

SPITFIRE MK-19



$1.50

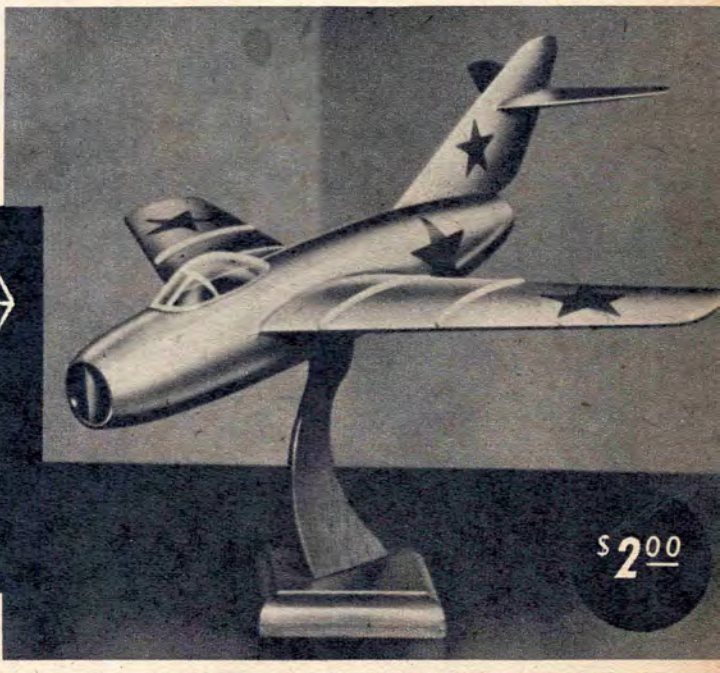
$2.00

F-86 SABRE JET

Right out of the skies over Korea to a prominent place among your display models! You'll find this F-86 Sabre Jet a masterpiece of detail and design ... complete with the same work-saving construction features that distinguish the other planes in this Testor series. Dimensions: wingspan — 17"; overall length — 19".

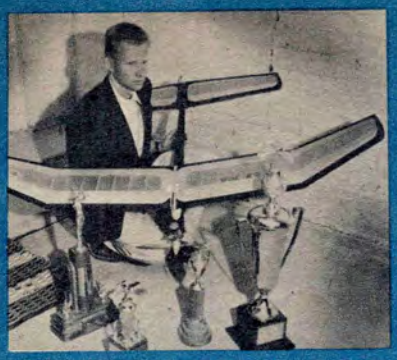
Here's another plane—the Russian Jet Fighter, MIG-15 — that's making front-page news in the air battles of Korea. You'll want this authentic scale model, too, for your collection. It will delight your friends ... give you new pride of craftsmanship. Dimensions: wingspan—15-3/4"; overall length — 16-1/4".

MIG 15

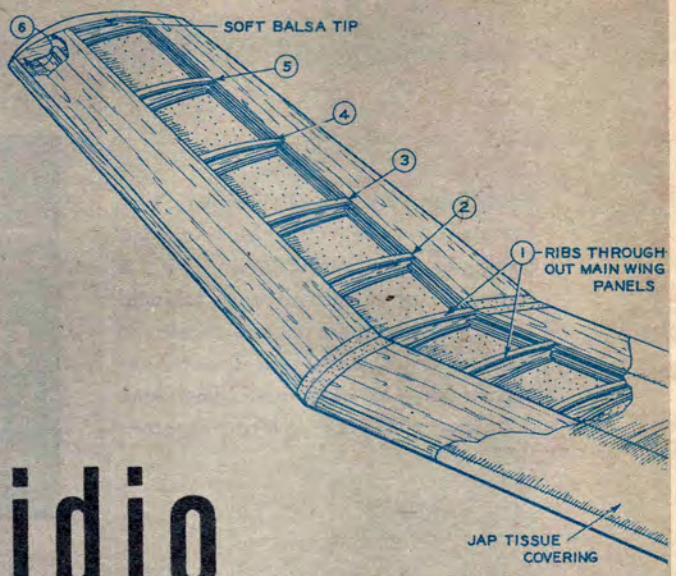


$2.00

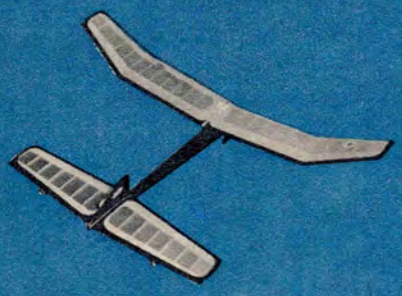
NY • ROCKFORD, ILLINOIS



Midshipman Gary B. Christiansen, formerly of Salt Lake City, Utah, but currently calling Annapolis, Md., his home is 19 and a member of the S.L. Active Modelers. Started in modeling at the age of 8, can't recall just why. Has held two National records with Class C F/F designs. This particular model made five consecutive flights of 10 minutes or more at Bakersfield. It established a record of 30-minutes, the magic number to free flighters everywhere. Gary attended the Plymouth Internationals at Detroit, Mich., 3 times.



Perfidio



By GARY B. CHRISTIANSEN

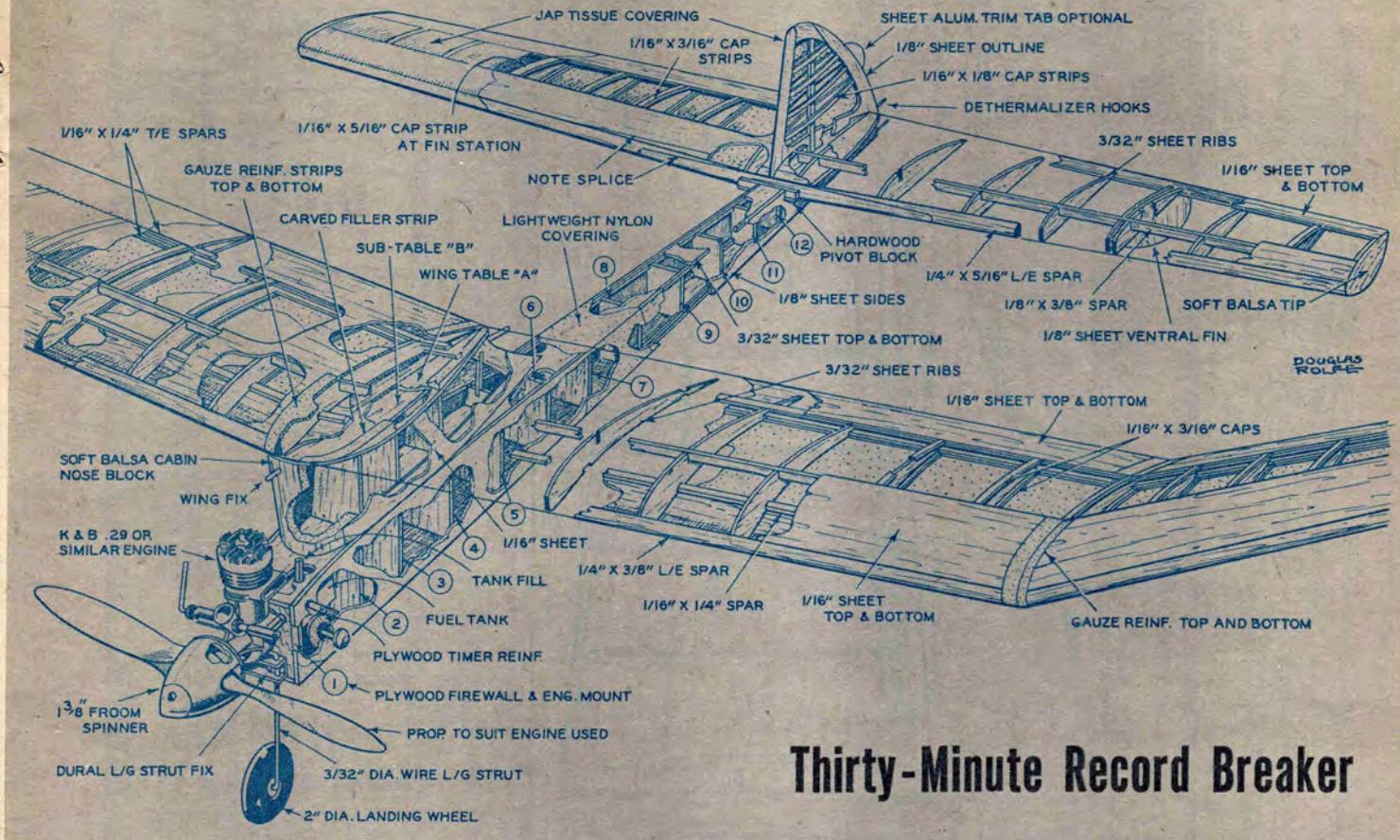
■ One virtue certainly not missing in free flight today is performance, or at least potential performance. The rules are very generous, and more than plenty of power is available. Thus it seems that we can well concern ourselves more than we appear to do with developing reliability in our models. Performance, quite naturally, is the be-all and the end-all of free flight work, but personally we believe there has to be a way of containing performance within the bounds of reasonable dependability. Therein lies the balance we tried to attain with *Perfidio*. The results—thirty minutes in the ship's first contest—convinced us that the idea is more than just academic.

The progress actually made in *Perfidio* toward a combination of performance and dependability came about on a more practical than theoretical level. Unfortunately the airplane couldn't be designed, feature for feature, to satisfy our demands. The evolution of the *Perfidio*, like that of most good airplanes, was fraught with mistakes.

We began four years ago with a basic layout very close to the fine Civy Boy—60% stab moment, 50% stab, and 6409 wing with settings very close to 0-0. Results were pleasing, but the urge to improve was strong. The next step was a shift to flat-bottomed section, preserving the same basic layout. We won't go into sordid details about the kid gloves necessary to handle a touchy flat section with a 100% C.G. et al. Suffice to say that we found what seemed to be some very good reasons to *us* for going into short stab moments.

Our first short-momented ships used 40% stab moments with undercambered wings and relatively thin stab sections on 43% stabs. Recovery with these airplanes was marvelous, and all of them were free from serious vices. However, we felt that it would be possible to help the glide a bit with a slight increase in stab moment. Next we figured an increase in stab thickness would bring our climb patterns under better control. After a year of juggling these varia-

This F/Fer is built like a speed ship! Fuselage has 21 coats of sprayed dope over a filled Nylon covering. The entire airplane is rubbed and waxed. After every flying session it's washed down



Thirty-Minute Record Breaker

tions and lowering wing positions from the traditional pylon mount, we came up with the present *Perfidio* layout.

Although there is much to be said for the long jobs, we justify the short moment used in the *Perfidio* on the basis of the following argument. Even though the longer airplane will outglide the shorter ship and is probably a little easier to groove into a climb pattern, these advantages are nearly always won at the cost of recovery. Even with as tight a glide turn as practical the lengthy plane usually loses a fair chunk of altitude at the end of the motor run.

The sad thing is that this lost altitude comes from the most precious thermal territory. Therefore, even if the long job beats the short-coupled one in dead air, the short one retains the important advantage of spending more seconds in the best thermal area.

The *Perfidio* uses a 614 square inch wing with a G-610 section. The stab is 45%, flat-bottomed, and 9% thick. The wing is set at 4.5 and the stab at 3.2. This angular difference of only 1.3 is not at all critical. The undercambered section and the 45% stab moment coupled with a very tight glide turn bring the ship out of a stall very nicely.

Once satisfied with a force arrangement, we went about deciding on a type of construction that would be as warp-proof and hole-proof as possible. Eventually we settled on the sheet construction used in the present *Perfidio*. The chief values of the sheet lie in its rigidity and comparative freedom from warps.

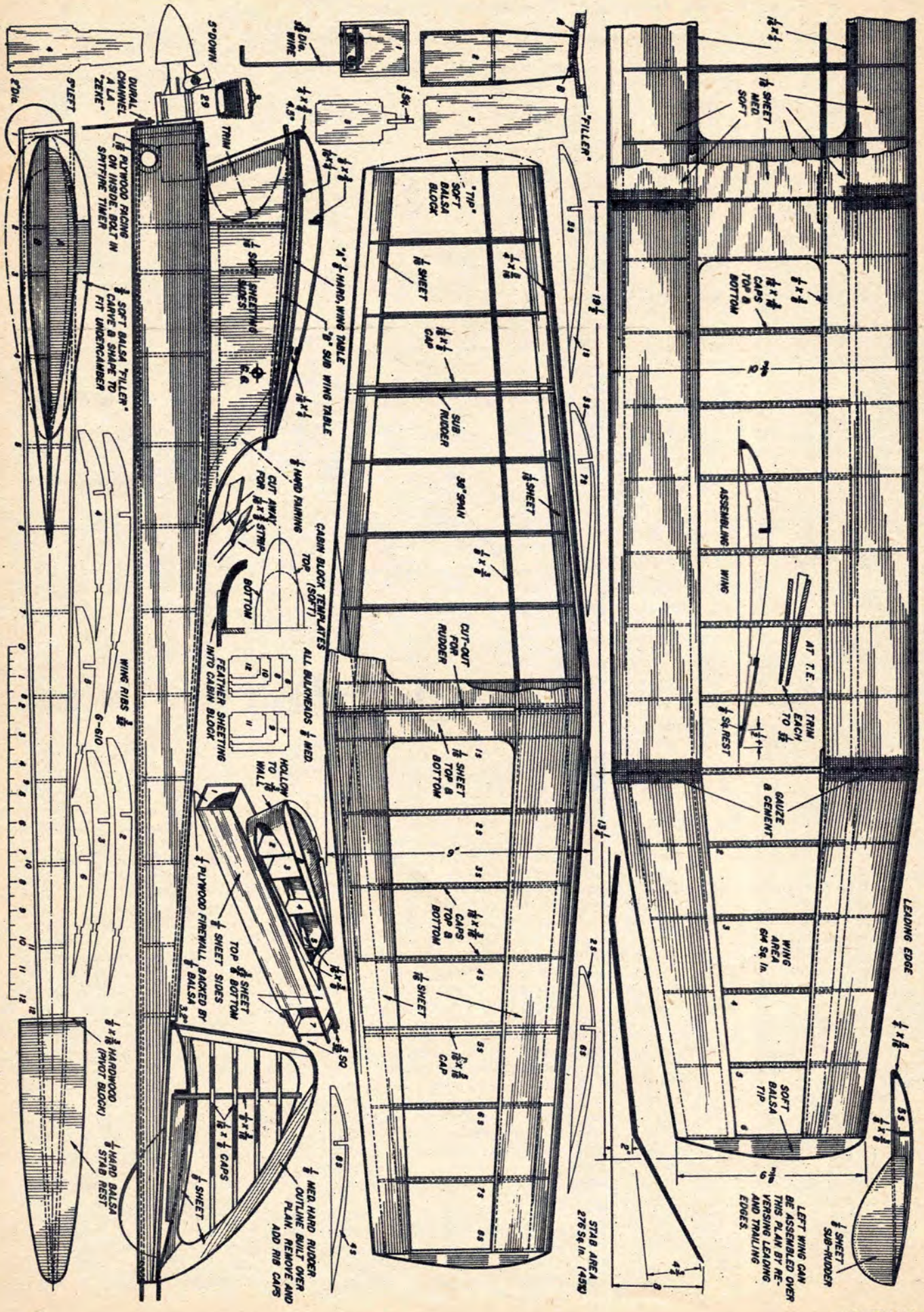
The only possible drawback is the weight, but when reasonable care in selecting balsa is exercised, weight compares favorably with more standard construction. After nearly a year of flying our *Perfidio* weighs just 32 ounces, liberally waxed.

The only thing at all out of the ordinary about the fuselage construction is the quasi-cabin wing mount. After the formers are in place, install the carved and hollowed cabin block. Add the sub-table and rear fairing. Then glue in the 1/16"x3/8" stringers and sheet the assembly with fairly soft 1/16" sheet, feathering the forward portion into the cabin block.

Finally, install the wing table and the wing mount lip cut from soft 3/8" sheet. Be careful to get a perfect matching between the lip and the wing undercamber. Just hack down the lip until it fits.

We like to fillet quite heavily with Aero-Gloss plastic balsa wherever possible, but that is a matter of personal taste. In covering the fuselage a light Nylon was used which doped on very nicely.

Start the wing panels with the leading edge, the main spar, the top rear sub-spar and the top trailing edge sheet. Note that the rear of the ribs will have to be blocked up about 1/8" inch so the top trailing edge sheet can follow the airfoil a half-inch beyond the rib tips. Next the panels are fitted together with the required dihedral. Additional data on full-size plans.


LEADING EDGE
1/16 x 1/4
1/8 SHEET MED. SOFT
1/4 x 1/4
1/4 x 1/4 CAPS TOP & BOTTOM
ASSEMBLING WING
AT T.E.
TRIM EACH TO 1/4
1/4 SQ REST
GAUZE & CEMENT
WING AREA 694 Sq. In.
SOFT BALSA TIP
1/16 SHEET SUB-RUDDER
LEFT WING CAN BE ASSEMBLED OVER THIS PLAN BY REVERSING LEADING AND TRAILING EDGES.
STAB AREA 276 Sq. In. (43%)
"FILLER"
"TIP" SOFT BALSA BLOCK
1/4 SHEET
1/4 x 1/4 CAP
SUB RUDDER
30" SPAN
1/4 SHEET
1/4 x 1/4
CUT-OUT FOR RUDDER
1/4 SHEET TOP & BOTTOM
1/4 x 1/4 CAPS TOP & BOTTOM
1/4 SHEET
1/4 x 1/4 CAP
1/4 SQ
1/4 MED. HARD RUDDER OUTLINE BUILT OVER PLAN. REMOVE AND ADD RIB CAPS
1/4 x 1/8 HARDWOOD (PIVOT BLOCK)
1/8 HARD BALSA STAB REST
1/4 x 1/4 CAPS
1/4 SHEET
1/4 SHEET TOP & BOTTOM
1/4 SHEET SIDES
TOP 1/4 SHEET BOTTOM
1/4 PLYWOOD FIREWALL BACKED BY 1/4 BALSA
3/8"
HOLLOW TO 1/8 WALL
FEATHER SHEETING INTO CABIN BLOCK
CABIN BLOCK TEMPLATES (SOFT)
ALL BULKHEADS 1/4 MED.
1/4 HARD FAIRING TOP
BOTTOM
CUT AWAY FOR 1/4 x 1/4 STRIP
1/4 SOFT SHEETING SIDES
"A" 1/4 HARD WING TABLE
"B" SUB WING TABLE
1/4 x 1/4
1/4 x 1/4 4.5°
TRIM
5° DOWN
5° LEFT
DURAL CHANNEL A LA "ZEKE"
1/8 PLYWOOD FACING ON INSIDE, BOLT IN SPITFIRE TIMER
1/4 SOFT BALSA "FILLER" CARVE & SHAPE TO FIT UNDERCAMBER
WING RIBS 1/4
6-6/0
1/16 Dia. WIRE
1/4 SQ

We'd Like You to Meet...

More modelers whose designs you've read about for years . . . now for the men themselves

Charles H. Grant . . . When still a boy, Charlie built a glider big enough to carry him, flew it off the woodshed roof—family cook promptly resigned. This in 1910. One of the really early users of balsa, he pioneered large scale production of model planes—had built 80,000 by 1922, 200,000 by 1931. Produced very successful all-metal model for sale in '28. Has written hundreds of articles on model aviation engineering, edited both model and full-scale plane magazines. Author of two books on model design. Holds patents on model and large plane design—his Grant Flap used on Martin 404 Transport. Prefers engineering approach to any problem, has taught mathematics. Ran summer boys camp at which model plane work was featured. Member of Early Birds, Princeton Eng. Assoc., Fellow of AMA.

Curtis D. Janke . . . Sez he started modeling about 1925 through sheer congenital compulsion. Curt is a bookkeeper and musician by trade, has always specialized in indoor rubber modeling. Won Springfield Trophy in 1946, Class C Indoor Stick Record, 1939, many places in various meets. Proudest of his founding with Walter Erbach of the "Knights of the Double Ellipse", dedicated to perpetuation of indoor models. Though he fears this may be a lost cause, he hopes to revive a bulletin on indoor flying the group used to publish—indoor enthusiasts are requested to write him on this, c/o A.T. Has not been very active in building during the past few years, but still trying to perfect the "perfect formula" for microfilm. Not too satisfied with progress. Member of the Sheboygan Pirates Model Club.

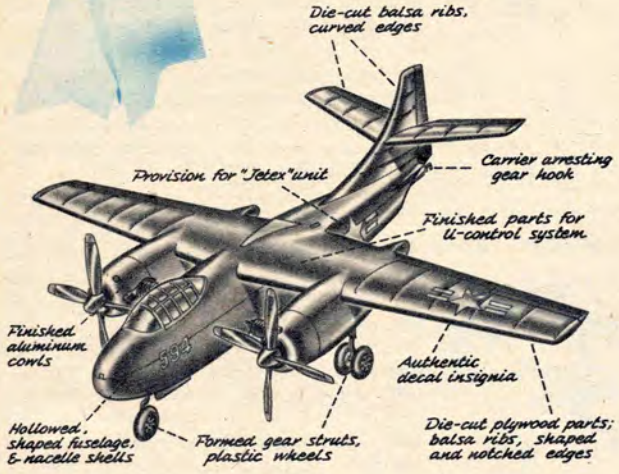
William Thomas . . . Bill considers his serious model building really started in 1938 when his dad gave him a Scientific Streamliner kit and a Brown Jr. gas engine. Prior to that he had built numerous small rubber jobs. Designed his first gassie in 1939, and established Class A Junior F/F record of 1 min. 33.5 sec. in 1940. His postwar record making seems to have been concentrated on the wires, for he established four Senior speed records in 1947, and another in '48. However, he took firsts in both FF and speed at the '47 Plymouth Internats, where he copped the Senior High Point Trophy. He also got several firsts in speed at the Nats that year, to take the Novice High Point title. Bill is a plastics manufacturer (Thomas Products) and is unmarried. He's a member of Daytona Model Plane & Car Club, and Va. BrainBusters.

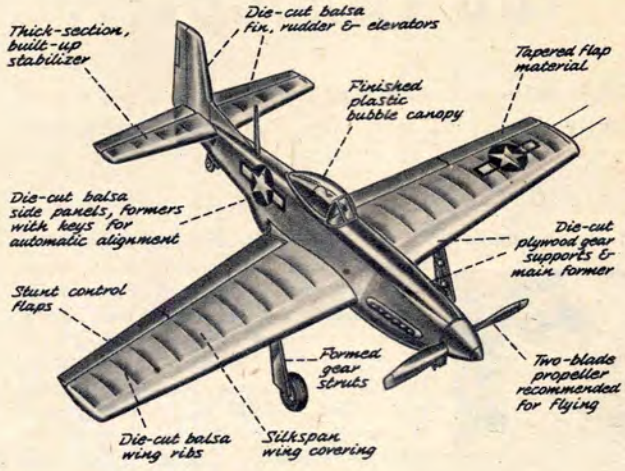
Ocie Randall . . . Here is another of those names you always see listed under "fellows who did all the work" at various meets, and other organized modeling activities. Ocie is a member of the Fresno Gas Model Club, California Assoc. Model Clubs, and edits the "Fresno Model News." Though he always seems to be involved in running meets, he has done plenty of flying too and has collected an impressive array of trophies, medals and ribbons. He is a city employee at Fresno, served in the National Guard in 1917. Says he started model building in 1927, while recuperating from a broken neck. Claims no records except a local duration time of 51½ min. in 1940. Ocie is married, has four children; the youngest, Carl, who is 20, is also successful modeler, was International Meet Champ, Senior Class D Gas in 1948.

H. A. Thomas . . . A free lance advertising artist, many of H.A.'s drawings appear in A.T., as have several of his designs, such as the Southerner and Courier. Lindbergh also inspired this modeler to make with the balsa—circa 1926 or so. H.A. spent considerable time in the Army Air Force, and holds a Commercial flying ticket. Was a barnstorming flyer in the Thirties. Always interested in scale models (remember his solid model series in A.T.?), was one of the pioneers in successful low wing model development, working with "Kingfish" Sadler. Claims no outstanding contest wins, but has taken many places in regional meets. An expert photographer, has huge file of model plane shots. Has tried most phases of model work but is now deeply interested in R/C. Is married and has two daughters, aged 5 and 9.

George P. Perryman . . . A kit from the "five and dime" store (the kit really *cost* 10c in those days) launched George on his model career in 1936. Since that time he has compiled an enviable list of wins, including two AMA records in Open Class E Towline glider, and three in Open Class E rubber. He was Southeast High Point Champ, 1942, '46, '49, Southeast Rubber Champ 1941-43 and '46, has qualified for three Plymouth International Meets. Though best known for his exploits with elastic power, George has some very successful gas designs to his credit; among them are Battleaxe, Revonooer, and Hardware Hound. Chosen Captain of the 1951 Wakefield Team, he placed 15th among the 50 entrants at Swedish Finals. Was in the Army Air Force for three years. Is a machine designer and draftsman when not flying models. Has wife Ernestine and two-year-old son, Steve. On the membership role of the Jaycees-Valley Model Club.

Walter A. Musciano . . . Few model builders, especially those interested in scale, need be told who Walt is, for his beautiful jobs have appeared in many issues of Air Trails and other magazines. Started modeling in 1930, after hearing of exploits of his Uncle, who was fighter pilot with Udet in World War I. Has never stopped building since—says he never will. A design draftsman for firm of Naval architects—also does model design work for kit makers. First business transaction in modeling was sale of built-up 10c kits to a department store for 50c (they resold them for several dollars each, but Walter was happy with the deal). Has always preferred scale and Wakefield types. Hopes to make a scale ukie top 150 mph. His "Classy Gassie" has won scores of contest places. Entered many contests pre-war; just builds and flies for pleasure now. Has done considerable full-scale flying. Married, has 5-year-old daughter Carolanne who can already fly control line.


Die-cut balsa ribs, curved edges
Provision for "Jetex" unit
Carrier arresting gear hook
Finished parts for U-control system
Finished aluminum cowls
Authentic decal insignia
Hollowed, shaped fuselage, & nacelle shells
Formed gear struts, plastic wheels
Die-cut plywood parts; balsa ribs, shaped and notched edges


Thick-section, built-up stabilizer
Die-cut balsa fin, rudder & elevators
Tapered flap material
Finished plastic bubble canopy
Die-cut balsa side panels, formers with keys for automatic alignment
Die-cut plywood gear supports & main former
Stunt control flaps
Formed gear struts
Two-blade propeller recommended for flying
Die-cut balsa wing ribs
Silkspan wing covering

Savage Customer

Three-engine scale for control line

■ This is one of those super-duper models that will interest the boys who are beyond simple little Half-A jobs which can be built in an hour or two. Even the modeler without too much experience should be able to handle the job, however, for the really difficult parts of construction have been semi-finished for him. A product of Berkeley Models Supplies (West Hempstead, N. Y.), the kit sells for $6.95.

The plane has been scaled down from factory plans and no deviations have been made from the design of the full-size ship. Thus, you will have a sure-fire scale contest winner, if you do a good building job. Furthermore, this is a natural for the Navy Carrier Event; you can imagine the feelings of the Navy judges, as this ⅜" scale Savage roars off the carrier deck with the two engines whining and the Jetex unit swishing in the tail! Yep, this is a three-engine job—there is plenty of room to fit any of the smaller Jetex power units, with the new Jetmaster 150 favored.

The fuselage comes in three carved pieces, a full-length section for the bottom half, and two shorter sections for the top. These are all cut practically to final shape on the outside, and are fully hollowed inside. Openings are cut for the cockpit and jet exhaust. The plastic canopy is embossed for realism.

Shaped and notched leading and trailing edges and die-cut ribs make for fast and accurate wing construction. To take the load of two wing motors and landing gear, there is a full-depth ply spar, and the entire wing center half is sheeted top and bottom. Two fully carved nacelles come in the kit, and there are also two spun metal cowls. Plans show the installation of both radial and beam mount engines. Power up to two .099's is suggested, plus a Jetex up to the 200 size.

Plans are full size for the 27" span ship, and are very complete, with countless detail assembly sketches, and step-by-step building and flying instructions.

Semi-Scale Stunt F-51

Veco's big job is realistic

■ Following the trend toward stunt ships which can do the full pattern yet have real scale appearance, Henry Engineering Co. (Burbank, Calif.) have brought out a kit for a Mustang stunter that is a real beauty. The ship is big—48" span with 408 sq. in. of area—and the model is a surprisingly close copy of the famed W.W. II fighter. The wings and tail surfaces have been enlarged, of course, but other than that, the model appears to follow the full-size Mustang proportions quite closely.

The kit costs $8.95, and for that you would expect to get quite an airplane. Well, you do. Though this is a complex model, it should not be too difficult to build, for the pre-fabrication is very extensive.

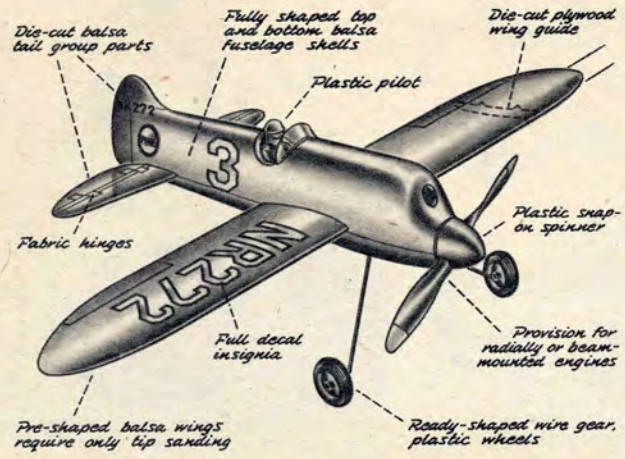
Take the wing, for example; ribs are all die-cut, something the builder really appreciates when making a tapered wing. All ribs have cut-outs for wires. The leading edge is plain square balsa stock, but the trailing edges are very deep, due to the use of full-span flaps. Trailing edges are notched and triangular-shaped balsa is included for the flaps. There are two built-up control horns, one for the flaps and one for the elevators.

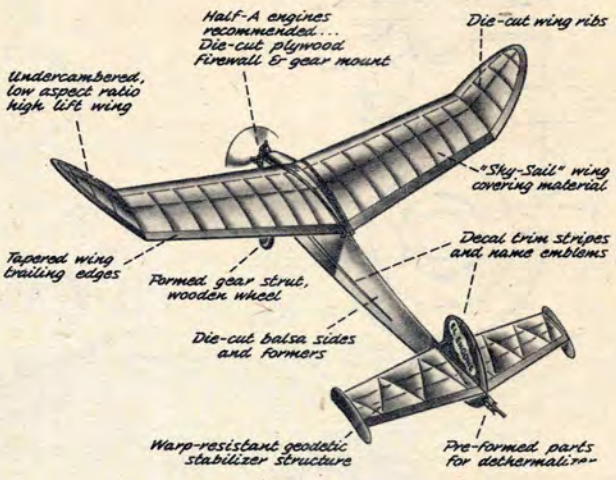
The fuselage is built up with sheet balsa sides, which have cut-out slots so that the formers can key into them, assuring proper alignment. Inverted engine mounting is used, and needless to say, the ship is designed especially to take either the Veco .29 or .31 engine. Comparable engines naturally can be substituted. A sturdy fully shaped plastic canopy is a feature of the kit.

There are two bent pieces of ⅛" wire for the landing gear, plus clips and nuts to hold them.

The plans are in the form of a large page of detail sketches of many portions of the assembly, plus a separate page with step-by-step assembly instructions. An additional printed folder gives full details for finishing, and these should be followed to the letter, for this kit will build up into a beauty prize winner, as well as a stunt winner.

RIBBON MODELS


Die-cut balsa tail group parts
Fully shaped top and bottom balsa fuselage shells
Die-cut plywood wing guide
Plastic pilot
Plastic snap-on spinner
Fabric hinges
Full decal insignia
Provision for radially or beam-mounted engines
Pre-shaped balsa wings require only tip sanding
Ready-shaped wire gear, plastic wheels


Half-A engines recommended... Die-cut plywood firewall & gear mount
Die-cut wing ribs
Undercambered, low aspect ratio high lift wing
"Sky-Sail" wing covering material
Decal trim stripes and name emblems
Tapered wing trailing edges
Formed gear strut, wooden wheel
Die-cut balsa sides and formers
Warp-resistant geodetic stabilizer structure
Pre-formed parts for dethermalizer

National Air Race Fan

Realistic, pre-fabbed team-type racer

■ Latest model off the assembly lines at Enterprise Model Aircraft & Supply Co. (Mineola, N. Y.) is a slick little team racer that practically falls together when you open the box. Another design of Jerry Brofman, the "Air Racer" has real big-plane appearance and is designed to stand the rigors of team racing. It sells for $3.39.

The kit is very attractively packaged; the box is fitted with compartments, so that all parts are well protected for shipping, and will display nicely, too.

Actually a very simple model, it should be possible to build it in the very minimum of time. The fuselage is in two parts, split horizontally about a third up from the bottom. Both parts are completely shaped on the outside, and need only a little sanding before the finish is applied. The two blocks are hollowed, and the upper one has the cockpit opening cut, and a groove for the wing. Die-cut plywood is furnished for landing gear mount, wire guide and the single bulkhead. The latter may be used for radial engine mount, and there is a piece of ⅛" three-ply to make a mounting plate as needed, for beam mounting.

The wing is a single piece of balsa, ⅜" thick at the maximum chord point; it is shaped to a cambered airfoil section. The tips are rounded off, and need only to be trimmed down to a thin edge to finish this part of the ship. The tail surfaces are 3/32" balsa, die-cut, of course, and there is Flightex tape for hinging the elevators. Parts supplied for the control system are complete and comprise bellcrank, wire for pushrod and a large lug for the control horn.

There is a decal sheet of numerals, a plastic pilot and a bright-red two-piece plastic prop spinner, all details that enable the builder to construct a really snappy-looking model.

The kit is intended for Half-A and A engines; test models were flown mainly with the Cub .074 (6/4 prop) and Cub .099 (7/6). Engines up to the .19 size can be used for those who want real action, yet the Air Racer will do nicely with peppy .049's.

Nebraska High Soarer

New configuration in free flight

■ We seem to be in the midst of a trend away from pylons, at least in the Half-A category. Whether this is true or not is hard to say, but here we have another non-pylon contest design—and one with very pleasing lines. The newest from "Occo of Omaha" (Olson & Clark Mfg. Co.), El En Gone is intended mainly for use with the hot .049 engines, but can carry anything from .039 to .074.

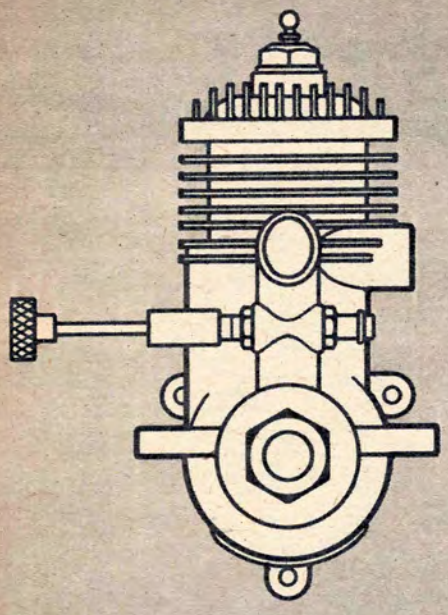
The ship features a low aspect-ratio tapered wing, which is sheeted at the nose and has undercamber. The kit is well prefabbed, so of course the tapered ribs are all cut for you. Triangular balsa stock is included for the trailing edge. The wing has two other spars as well, and is of the polyhedral style.

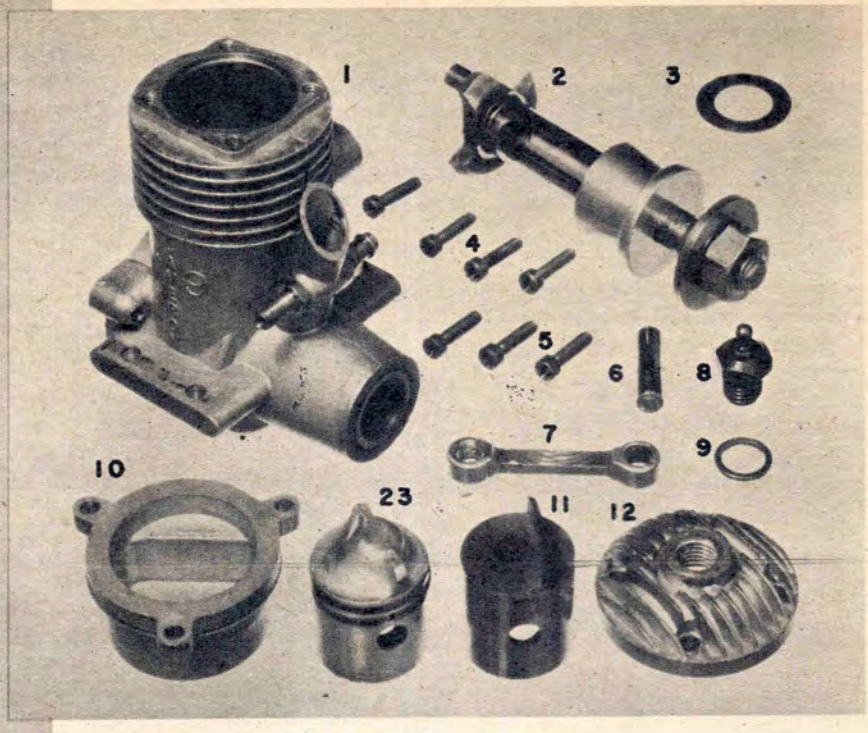
The stab is of high aspect-ratio design, but to insure warp-resistance, the ribs are installed in the geodetic manner. The stab also has two spars in addition to the leading and trailing edges, and triangular strip is furnished for the latter. Small tip rudders act as twin tail skids, and there is a sheet center rudder. This ship should be fitted with a dethermalizer, and the kit includes all instructions and the necessary parts for this essential, which is of the standard fuse type.

The fuselage sides are completely cut to shape and ready for use. There are six sheet balsa formers, and the one at the nose is strengthened by the addition of a plate of plywood, since it forms the mounting for the engine and single-wheel landing gear. Bent wire and wheel make up this gear. Quite a bit of downthrust is built in, and the instructions advise the use of even more, if you use a very hot engine. The fuselage is of triangular shape with an edge at the top, and is all-balsa, requiring no covering.

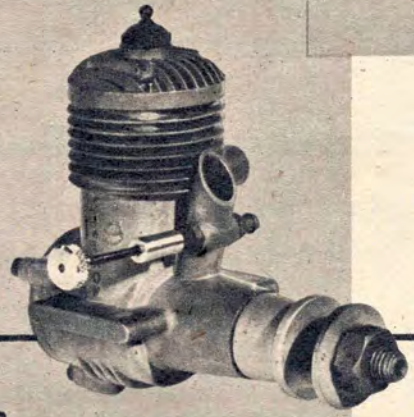
Several sheets of red Sky Sail paper allow more than enough material for wing and stab covering.

The plans show actual installation of the K&B Torp .049 and the Wasp .049. Since the area is 210 sq. in., and the finished weight will be around 5 oz., wing loading will be about 3½ oz. per sq. ft., and performance really spectacular.





MOTOR OF THE MONTH



Cameron .19

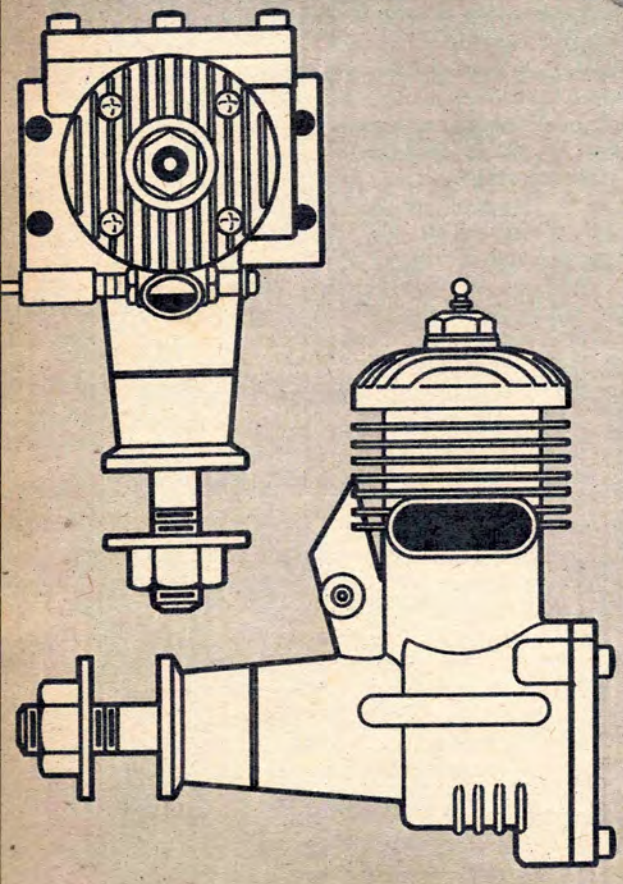
Old-line California engine concern unveils its own brand of "19's"—fine performers

■ The Cameron Precision Engineering Company of Chino, Calif., recently introduced their .19 twins. Both the piston ring and lapped piston model sport many features formerly found only in .29 or larger engines.

Appearance is different from the current run of the mill design. A long crankshaft sets the propeller far ahead of the needle valve to provide ample finger clearance while adjusting the engine. The front shaft rotary valve makes the new 19s easy to install in a model. Generous lugs provide for beam mounting. A steel thrust washer is provided between the drive washer and the main bearing to take pressure from electric starters. The shaft is hardened and ground and drives the propeller back washer with a taper.

Excellent carburetion and steady flight performance are accomplished by using a large rotary valve and large hole through the crankshaft connecting to the base, in conjunction with the high base compression. The fuel level tests on both Cameron .19s are equal to some of the best .29 and .35 displacement engines. A domed die-cast aluminum piston is used in the ring engine with a domed cylinder head to provide low turbulence and complete scavenging of exhaust gases.

The cylinder liner is very thin and is pressed into the base casting. A higher compression ratio is used in the ring engine. The lapped engine uses a hardened steel piston with a curved milled baffle. The cylinder liner is thicker and slips out of the casting easily. It is anchored in the (*Continued on page* 52)



DMECO MODELS

"AMERICA'S FINEST"

5

1. COMPLETE HARDWARE!
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GOOD REASONS WHY THEY ARE BEST!

HARDWARE... Dural Gears! Nuts & Bolts! Screws! Covering! Wire! Decals! in most kits...

DRAWINGS... All the parts are shown full size! Complete Assembly views and instructions! Engine Installations and Test proven accessories listed!

MATERIALS.. Premium selected Grade A/1 balsa is used! All hardwood parts are tough seasoned maple! Plywood is 1st grade oil proof Aircraft quality!

REDI-MADE... All parts are precision finished to close tolerances using DIE-CUTTING, CARVING and SHAPING to the best advantage!

DESIGN... The design is right for the job to be done! Only after months of vigorous, all out field testing is it offered to you! — and they are exclusive too!

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SIMPLE TO BUILD STABLE AND RUGGED. A FINE BASIC TRAINER .04-.09 ENGINES $1.75

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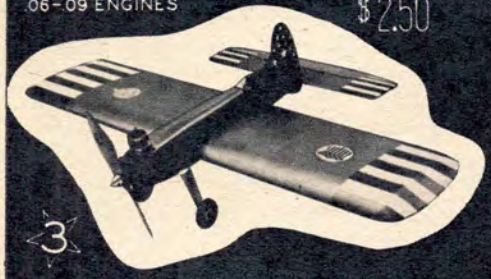

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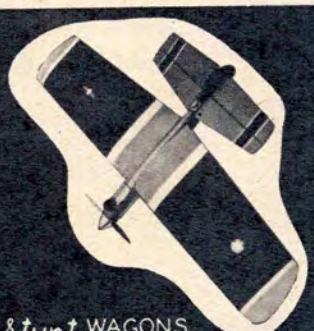

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Cameron .19

(*Continued from page* 50)

correct position with a small pin fitting into a notch at the bottom of the liner. The piston and cylinder are fitted with proper clearance to avoid the long tedious break-in usually connected with engines using a hardened piston.

Our engine tests started with a break-in on a 9/6 propeller. The ring engine limbered up quickly and ran steady at all speeds. Continued running for a long period of time showed a very gradual increase in rpm as the ring friction became less. The lapped piston engine was limber enough to run very well at low and medium speeds, but required considerable break-in for high rpm operation.

The ring engine ran much smoother and with less vibration at high rpm due to the light weight piston. Starting was best when the engine was not too hot and a light choke used rather than a prime, so that fuel would be picked up quickly when the engine started. The engine test showed an amazing ability to feed fuel easily. The fuel level test of 15 inches is nearly double that of the average .19 engine. The Cameron .19 powerplants should create new interest in small size stunt ships.

The history of Cameron Engineering goes back many years. Bob and Donald Cameron built several model steam and compressed-air engines and became interested in model aircraft gasoline engines when they first appeared in 1935. After studying all available engines and experimenting with their own designs they started to sell engines to fellow modelers on a custom-built basis. A short time later they went into production on the ".72 Hornet." This was the start of the Cameron Precision Engineering Company.

Development in engine design and manufacture continued and a new model was ready for mass production in 1939, but then the war came along. Production facilities were shifted to hydraulic pumps, valves and other precision parts for aircraft. Spare time was still devoted to further development of model engines and production methods of manufacturing.

Later in the war Bob joined the Navy and was put in charge of the machine shop of the floating dry dock YFD-64 in the Philippines. He also spent his spare time making engines from scrap parts of Japanese suicide planes.

After the war Cameron Engineering really got a start in model engines. They have been mass producing several popular engines sold under other names as well as the Cameron .19 and .23. The Cameron shop is very well equipped. They design engines, build dies, special tools and machines and are equipped to make high-pressure aluminum die-castings. They also have equipment to do lapping, grinding and make screw machine parts.

ENGINE DATA

Cameron .19—Lapped

Performance. Bare weight: 4.42 oz. Propellers—9/6 narrow blade wood: 9,500 rpm. 8/6 wide blade wood: 11,000 rpm. 8/6 narrow blade wood: 12,200 rpm. 8/3½ wide blade wood: 12,700 rpm. 7/4 plastic coated wood: 15,400 rpm. Fuel: blends for large engines better than Half-A mixtures. Fuel level test: 15" at 11,000 rpm.

Design Data. Displacement: .193 cu. in. Class: A. Stroke: .630 in. Bore: .625 in. Stroke bore ratio: 1.02. Compression ratio head: 5.5. Compression ratio base: 1.58. Port area intake: .049 sq. in. Bypass: .047 sq. in. Exhaust: .071 sq. in.

Construction Features. Bearing, crank shaft: oil-less bronze. Crank pin: aluminum. Wrist pin: aluminum. Large rotary valve.

Cameron .19—Ring Engine

Performance. Bare weight: 4.1 oz. Propellers—9/6 narrow blade wood: 9,700 rpm. 8/6 narrow blade wood: 12,500 rpm. 8/3½ wide blade wood: 13,500 rpm. 6/8 plastic wood: 14,400 rpm. 7/4 plastic wood: 16,300 rpm. Fuel: Blends for large engines better than Half-A mixtures. Fuel level test: 14" at 12,000 rpm.

Design Data. Displacement: .199 cu. in. Class: A. Stroke: .630 in. Bore: .635 in. Stroke Bore ratio: .992. Compression ratio head: 6.6. Compression ratio base: 1.61. Port area intake: .049 sq. in. bypass: .062 sq. in. Exhaust: .098 sq. in.

Construction Features. Bearings, crank shaft: oil-less bronze. Crank pin: aluminum. Wrist pin: aluminum. Aluminum piston with dome and low turbulence baffle.

PARTS ILLUSTRATED

(Lapped Piston)

1. Crankcase: die-cast aluminum, 1.48 oz. Liner: steel, .6235" bore x 1⅛" long, 1/16" wall, .53 oz. Needle valve ass'y: brass and steel, 1/16" needle, .10 oz. 2. Crankshaft: steel hardened and ground, .370" dia. shaft, .172" crankpin, .75 oz. Drive collar: aluminum, ¾" dia., .21 oz. Front washer: steel, ¾" dia., .12 oz. Propeller nut: steel, ¼-28 thread, .11 oz. 3. Thrust washer: steel, .015" thick, .03 oz. 4. Cylinder head screws: steel, 3-48 thread, .07 oz. 5. Back cover screws: steel, 3-48 thread, .04 oz. 6. Wrist pin and pads: steel hardened and ground, .170" dia. x 9/16" long, .04 oz. 7. Connecting rod: aluminum, 31/32" long, .02 oz. 8. Glow plug: steel, ¼-32 thread, .08 oz. 9. Glow plug washer: copper, .032" thick. 10. Back cover plate: die cast aluminum, .27 oz. 11. Lapped piston: steel hardened and ground, .6234" dia. x .640" long, .32 oz. 12. Cylinder head: die cast aluminum, 1⅛" dia., .25 oz.

Model R—Ring Type

21. Liner and crankcase: .6355" bore x 1¼" long, 1/32" wall, 1.84 oz. 22. Wrist pin: steel hardened and ground, .170" dia. x 17/32" long, .04 oz. 23. Aluminum piston; die-cast aluminum, .6335" dia. x ⅝" long, .17 oz. Piston rings: cast iron, .046" wide.

Interceptors

(*Continued from page* 21)

by the indication of your attitude gyro. High altitude flying, even in broad daylight, is strictly instrument business because you have no reference points for visual flight: the horizon lies far below its usual eye-level position seen on earth or at low altitudes. You've been climbing less than four minutes.

Up here, distant planes appear against the darker background as glinting slits of light instead of the customary silhouettes seen from lower altitudes against the lighter sky. Without radar detection, a plane could approach to within five or six miles before you saw it. And you would see it then only if your eyes happened to be focused on just the right sector of sky. This is one of the reasons jets can "bounce" one another so easily at altitudes: with their terrific closing speeds, attacks can be made in a matter of minutes or even seconds. By the same token, bombers can also sneak by interceptors on the prowl.

But your radar sight is scanning while the hostiles are more than a hundred miles away, according to the AFC's information. The Mach meter creeps upward.

You feel a series of slight bumps as the ship bores through the once-dreaded sonic barrier. The delta wing is largely responsible for this smooth passage through the transonic region. Now you're going all out, with the J-57 and rockets kicking the plane along at Mach 1.5, or a true airspeed of 990 miles per hour at this altitude.

The pressure suit feels just a little cumbersome; but you would feel a lot worse without it. The headset crackles the AFC's warning: "You should establish contact within two minutes—that is two minutes. How do you want me to spot you, Baker Leader?"

"Set me up for a high side pass."

He will guide the interceptor into just the right position for attack, saving the valuable seconds you would spend otherwise in maneuvering visually for the correct position to make your run.

There's a weighty G force as the inter-

(*Continued on page* 55)

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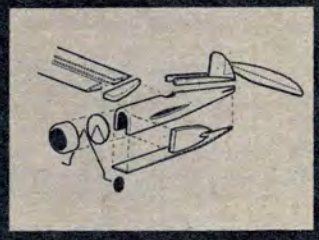

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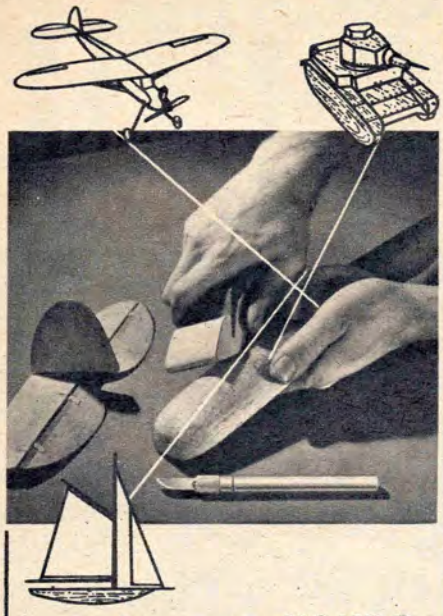

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Ed Mate of Chicago gets his PAA-Load entry "Lifty" underway at Nationals. Ed carried models in huge cardboard box using trains, buses, streetcars & apologies.

Dope Can

Comment and photos from modelers world over; $5 for photos used

■ In traveling around to modelplane meets, club sessions, exhibits and the like we are continually amazed at the creative skill demonstrated by the average modeler. Not just the top experts mind you, not the few meet winners—but the run-of-the-mill modeler who's in the game for fun and because it's the next best thing to and the least expensive way to get close to full-scale aviation.

Sometimes we think the modeler loses sight of the fact that he is pretty well ahead of his non-modeling friends when it comes to turning out something—almost anything—in the craft, hobby or model fields. So let's not sell that ability short. And here's why. . . .

Again this year the Fisher Body Craftman's Guild is offering 734 separate awards worth $65,000 for your idea—executed in model form—of the automobile of tomorrow. Among the prizes are eight university scholarships worth $1,000 to $4,000 each. Doesn't that sound interesting, huh?

You don't have to make an operating model, just a solid model of any easily worked, durable material. You use your own ideas as to body lines, fenders, lights, windows, and so on. The F.B.C.G. provides all kinds of plans and ideas to get you started right. The competition is divided into a junior age group for those 12 through 15 years of age, and a senior age class for those 16 through 19. The Guild tells us that 115 young fellows have been awarded college scholarships in past competitions and that 10,000 other young modelers have walked off with $538,000 in awards.

All the dope is available from the Fisher Body Craftsman's Guild, Dept. D-2, General Motors Building, Detroit 2, Mich. No charge. And as we said before, we think any average model plane fan has a real head start in a deal like this. Hop to it, mates.

Why So Small? Since attending the Nationals this year ("a wonderful experience!") Rev. James D. Reid, pastor of the Messiah Evangelical Lutheran Church in Bremerton, Wash., and advisor to the Mad Modelers club, has been bothered by one question: what's wrong with team racing?

On the face of it, he points out, everything looks fine. Exciting, great spectator appeal, etc., etc., etc. But up in his section of the Northwest it just hasn't caught on. Apparently it has in some localities around the country, but if Southern California is one, where were all the team racers at the Nationals?

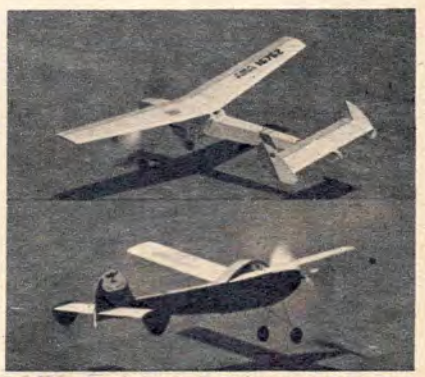
Advisor Reid thinks we should get more folks interested in T/R, but in a much simpler manner than at present. Forget about the engine cut-off requirement at first. In small contests they aren't important. Their main advantage is in cutting the short races down in the matter of time required to run them off. If not many are entered, the time element isn't important. And this little gadget seems to be the big bugaboo for most modelers. Cut-offs aren't required in England and there team racing enjoys great popularity. Save the cut-offs, says the Reverend, for big contests like the Nationals.

Furthermore, suggests JDR, for the local, small contests cut down on the number of heats. Fly three or four ships at a time (depending on the number of entrants) in three heats: a 7-lap qualifying heat (solo) points to the fastest qualifier; a 21-lap race and a 70-lap race. Then, the winners of the two races to compete against each other if desired.

Another suggestion is that the new recruits begin by modifying a standard stunt or combat model, simply putting in a one ounce tank ("Acme's 1½" wedge tank Type B is almost exactly one ounce") and flying together. No reason why such novices couldn't compete against regular team racers; they would be at a disadvantage, of course.

It's recommended that we enlarge the engine displacement restrictions by either having two classes of team racers as in England (say engines from .09 to .19 in one class; engines from .20 to .35 in another) or else have one class for all engines of .15 up to .35. Certainly on the local level this could be done even if the national rules were not changed. The small engine would be slower, but would be more economical, thus giving the unskilled team a chance due to fewer refueling stops, but not handicapping the hot team with the fast ship. And, important, the appeal would be extended to those not possessing .29's.

Dr. Reid wants us to forget about "stooges". The device, admittedly wonderful, is (*Continued on page* 78)



Two interesting designs in the experimental rubber-powered PAA-Load event at the Nats: top—Tom Henebry's man-under-the-fuselage ship; bottom—Lo Salisbury's 5th place job. Mal Alberts, Los Angeles, won event with 194.1 sec. D. Sladek, 2nd, 172.4; F. Takagi, 3rd, 138.6.

(Continued from page 53)

ceptor swerves onto the new course. You see two blips clearly in your panel scope, and radio back, "Contact."

The radar sight switches automatically from "search" to "aiming" function as you close the range. You flip a control switch to OVERRIDE position to take over control of the plane. You set the arming switch for the AAM-1, the missile in your port launcher. Keeping the radar image centered in the scope—by maneuvering the plane—so that the radar computor can assimilate the range and deflection data, you make the approach at right angles to the lead bomber.

The range closes to five miles. Missile number one is launched automatically by the sight mechanism. You watch it hunt slightly then steady down in a sweeping curve. Banking the plane, you watch the big TuG-75—the "Russian B-36"—disintegrate as the AAM hits home.

You bank towards the second Red bomber. It takes violent evasive action, and you have to make a rear pass in order to hold its image in your scope. You arm the AAM-2, the "bird" in the starboard launcher.

Then the missile is away with a blast of rocket flame. You watch it curve, via radar homing, inside the weaving bomber's path. The red-orange mushroom of flame four miles away looks terrifying against the purple-black sky background.

"This is Baker Leader. Double murder!" Your radio report is made triumphantly and somewhat excitedly to the AFC. "They are T-U-G seven-fives—or they were. . . ."

Setting back your control selector from OVERRIDE to AUTO, you say into the mike, "Ready again for automatic. Bring me home to mama!"

The rocket engine is switched off, and you throttle the turbojet back to 92 percent power. As the ship noses into a steep glide, you pop out the finger spoilers that act as dive brakes.

Your buddies of Baker Flight are, meanwhile, busy elsewhere in the stratosphere. You learn later that the enemy had attempted to sneak in his bombers by pairs from different directions at five-minute intervals. He had also attempted radar countermeasures against both ground and airborne radars. But our anti-jamming gear, memory circuits, and other electronic gadgets foiled completely the Reds' trickery.

The AFC steers you toward the home airdrome. You have only been aloft for a few minutes, but the nervous tension and the enervating effects of high-altitude flight leave you limp and tired. You are glad, as you approach under the automatic control through the drizzle and line up on the path of the newly-designed microwave landing system. You switch to OVERRIDE again and land the ship manually as the runway slides beneath. Mission completed.

But at the interrogation later, you learn that not everyone has dispatched

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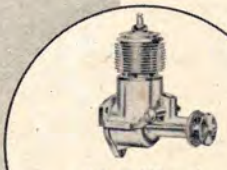

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his target with such good fortune. Some of the TuG-75s carried missiles, too. Though not as efficient as our AAMs, they had performed well enough to knock down two of Able Flight's interceptors before the latter could strike. Reports filter in from other regional air defense forces. Some of the Red A-bombers had got through: not many but enough to accomplish considerable damage against Boston and Detroit. For the Soviets, it had been a maximum effort. But not one of the raiders they sent against New York, Washington, Los Alamos, or Hanford had penetrated the sonic interceptor net. And, in the meantime, the same alert signal which had sent you and your mates aloft also dispatched certain SAC units on retaliation strikes. . . .

This might well be the last and only enemy effort to bomb the U.S.A.

Tomorrow's Pilots

(*Continued from page* 16)

among young people in any locality where patriotic citizens are putting on a drive for GOC. Offer a flight course at least to the stage of soloing a plane at the local airport. A few such prizes would encourage others so we would be a long way toward our goal of leading young people, like the one in the picture, from onlookers to participants and then to actual flight. Those who start flying in small planes soon will be impatient to try larger ones.

Q. Isn't Russia doing that on large scale?

A. Yes, in the Soviet way, to man an air force which is a threat to the world. We must work fast to bring our youth—in our way—into the air force that is the hope of the world.

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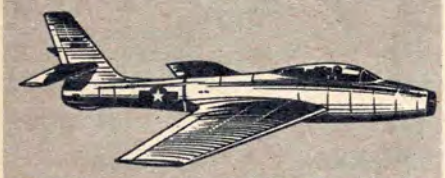

S-126 Republic F-84F Thunderjet

S-127 McDonnell F-88 Voodoo

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R/C

(*Continued from page* 10)

others go in for 60's. Bob mentions a ship of 600 sq. in. and 4 lbs. This is about the size and weight of the Robot, and a good .19 will do a fine job with this plane.

Stuart Culp, Bethany, Mo., asks how far apart the turns on the grid coil of the transmitter in the May Column should be. This coil is "close wound," that is, the turns are not spaced apart at all. When tuning up the transmitter, it is not necessary to adjust the grid coil in any manner. He asks if a 14' 5" folded dipole can be used with this transmitter. By formula, the length required for a dipole at 27.255 is about 18' 2", but final length would have to be arrived at by actual test. Have any readers used a dipole on 27¼? Let's have a note on results.

John Behne, Manhasset, N. Y., asks that we put his name in the Column, as he would like to get in touch with other R/Cers in his area. He is 15, has an O&R .60 powered ship under way. OK, John—you're in.

Technical Topics. One of the few weaknesses of the Rudder Bug (and most other trike geared ships as well) is that the nose wheel takes an awful beating. They often require rebending of the nose wheel wire after almost every landing. A way to avoid this is depicted in Fig. 1. This landing gear was shown to us by Walt Good, who has been using it for some time, and finds that it just about solves his nose wheel problems.

The gear is attached to the bulkhead in the normal manner, but is given two "cross overs" before it gets to the wheel axle. At these two points, metal sleeves are wrapped. Regular ⅛" wire is used and Walt finds that each torsion section will allow about 30 deg. bend without deforming. The wheel itself is a regular air-filled type that has been stuffed full of sponge rubber "crumbs."

Ray Megerian, Clearwater, Fla., sent a pic of a boat he uses for R/C testing. He says it is just a tub, but will hold a tremendous amount of gear. The boat is fitted with a proportional system for the rudder, operated by a 3-tube receiver. There is a gas-tube receiver on a separate channel for motor start, stop, slow and reverse, with a telephone dial at the transmitter. He finds that the boat lets him concentrate on R/C problems, and he can pile in large batteries. There are four meters showing. It would take a huge plane to hold this much apparatus!

Large numbers of slide switches are used by R/C men, particularly in the plane, where the light weight and small size of this style switch is of interest. From sad experience, we—and probably lots of other flyers, too—can tell the novice to examine his switches carefully before installing. Many of these units are made with a metal ball or rounded sheet metal as the moving contact member. You can see the ball by looking endwise into the switch. *Don't ever* use this kind in your plane; in fact, you'll be wise not to use them anywhere.

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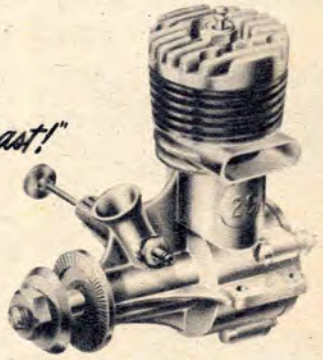

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best, and both it and the fixed points pick up dirt. Due to the construction used, the dirt is not scraped off, resulting in uncertain switching action and often complete failure. There *is* a reliable type, though. They are made with sliding contacts that really clean themselves. They come in several shapes, but all are characterized by double-sided contacts as sketched in Fig. 2. Most of these switches have no name, and suppliers often do not know who makes them, so you can't order with any certainty. The only safe way to get the sort of switches you can trust is to examine them before you plunk down your money.

We have been making some tests of a type of storage battery known as the Silvercel during the past season. This is an alkaline cell which offers some real advantages for the R/C man. It also has a few disadvantages, which, if well understood at the beginning, need not be too troublesome.

First, the cell is relatively expensive. The type we have used is rated at 1 ampere-hour, weighs a trifle over an ounce, measures 2" x 1" x ½" overall, and costs $10. Of course, you can buy a lot of flashlight cells for ten bux—but don't turn the page yet! The cell has a constant voltage of 1.5 under all loads the radio flyer is apt to apply, and this voltage *stays* constant for the duration of a charge. You can take an amp. or more from the HR-1 size without any damage (the voltage drops a little under such a load), and you can give the cell a quick charge at this rate, if you need it in a hurry.

We have been using one HR-1 for the 90 ma. drain of our 3-tube receiver plus the average 50 ma. drain of the proportional actuator. Thus, one charge allows a good safe 4 hours or so of flying before a recharge is given.

One of the real drawbacks of the cell is that there is no simple way to check the charge left. There is practically no free electrolyte—there wouldn't be enough for a hydrometer anyway—and as already mentioned, the voltage stays at 1.5 till the cell goes dead. Thus it is necessary to keep a rough log of the number of hours the cell has been in use.

Still, considering the advantages, we feel the Silvercel may become very useful to the R/C fraternity. The light weight and small size make the unit a natural for the midget plane boys. There is steady voltage to make those gas-tube receivers happy. The cell gases hardly at all, and can be charged without removing it from the plane. Unlike the lead-acid style of cell, the Silvercel may be left discharged for months without harm. Besides the HR-1 we have described, there are larger and smaller sizes; full information may be had from Yardney Electric Corp., 105 Chambers St., NY, NY. We will give more data on our findings with this unit at the end of the season.

Commercial News. Back in the dear dead days before the war, one of the biggest items of model plane interest every year was the appearance of Frank Zaic's Yearbooks. No new ones have been printed since the war until recently, when we were really happy to see Frank's "1951-1952 Model

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Aeronautic Year Book." What makes it of especial interest here is that there is a large section on R/C plane design, plus half a dozen three-views of successful radio planes.

You can obtain this book from many hobby shops, or direct from Model Aeronautic Publications, Box 333, Sta. D, New York 3, N.Y.

Many flyers who use escapements have seen the necessity of some sort of control box that will count off the required pulses for left or right rudder, so that left or right may be had without the need of remembering "what comes next." A "Beep Box" is one way, but this requires a motor and battery connections. Another way is the E-Z Automatic Radio Control Switch, sold by Osborn Hobby Associates, 586 Osborn St. Brooklyn 12, N.Y. It's a little leatherette-covered box that you can hold in the palm of your hand.

On the face are a pushbutton and a single knob. The button allows you to get in step with the escapement, the knob to turn either way with no counting needed. Internal contacts are arranged to send the pulses needed to turn right or left, and to get back to neutral. No battery is required, the switch connecting in place of your regular control button. The type for 2-arm escapements costs $8.50, while for another dollar you can get one that will operate a 4-arm job.

We note: O. V. Tyler from Omaha won 1st at a Sioux City R/C meet by 100 pt. margin using this E-Z with Torp .19 Rudderbug and McNabb equipment.

Here we are at the end again. You R/Cers have been slipping on sending in your comments, club news, requests, and so on. Sure, you've had a tough contest season, but it's over now, so how about a line or two on your experiences?

—HOWARD MC ENTEE

Aerobatics

(*Continued from page 27*)

dream come true—an opportunity to buy an aerobatic plane that I had set my heart on back in the days before the war: the famous Buecker-Jungmeister, the greatest precision aerobatic ship ever designed.

I purchased my pride and joy from Col. Mike Murphy, who in 1946 had retired from active aerobatic flying after a long and brilliant career in world competition. It was with the Buecker-Jungmeister that Murphy in 1941 won the Freddy Lund event for the third time and thereby gained permanent possession of the trophy. Also the same year he placed first with the Buecker in the International Aerobatic Contest at Dayton, Ohio.

The Buecker-Jungmeister was manufactured in Germany in 1936 under the provisions of the Versailles Treaty. Built ostensibly as a sport plane, this model was actually used as an advanced trainer for German Air Force fighter pilots.

To my knowledge the Buecker-Jungmeister I obtained from Murphy is the only plane of its type in the United States. And

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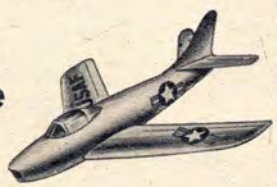

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This year's recipient of the "June" Pierce Sportsmanship Memorial Award (presented by Mattie Sullivan) was Dick Sladek of San Diego, noted F/F designer and winner.

■ The 1952 Nats have come and gone, and the "local" guys won more than their share of prizes. Records proved to be a dime a dozen or so they seemed, as they were broken with monotonous regularity in free flight events.

It is felt that the models flown by the Western delegation more than made an impression with the visiting Easterners who were treated to our usual weather conditions (bless old man weather; he did us right) which resulted in high flight times and fast speed jobs. For seven days we were treated with calm thermal-bountiful weather 'til eleven o'clock each morning, then an increasing wind but still plenty of bumps the rest of the day.

Not enough can be said of that swell bunch of fellows who unselfishly gave up their chance to compete in their specialties, in many cases their first chance to fly in a nationals, in order to assure our guests that this would be a contest for (*Continued on page* 62)

Sladek's first place Half-A PAA-Load entry which ripped off total time of 26:09 in open age group. Dick was also 3rd in Class A F/F with 21:12; 2nd in Rubber PAA-Load.

Aerobatics

(*Continued from page* 59)

I rather doubt if the same model is available anywhere abroad, although there are a few Bueckers still flying on the Continent. Mine was brought to these shores in 1936 aboard the Hindenburg (shortly before the dirigible's tragic destruction at Lakehurst) by the late Capt. Alex Papana, famed Rumanian aerobatic ace.

The Rumanian flier demonstrated the Jungmeister in this country for the first time in 1936, at the National Air Races which that year were held in Los Angeles. In 1937 he flew it in the International Air Meet in St. Louis, winning second place. He won the aerobatic championship contest with it in 1940 at the International Aviation Exposition at Havana, Cuba. He sold the plane to Murphy the next year.

Since buying the Buecker in 1946 I have flown it in all the larger air shows from coast to coast. In 1950 I toured the major air meets in Europe.

I won the international open aerobatic championship with my newly acquired plane in 1947 at Miami and the next year at the air maneuvers I finished second. I planned to fly it there in 1949, but a balky engine forced me to switch to my clipped-wing Cub. (Luck rode with me again—I won.) In 1950, my last year of competitive aerobatic flying, the Jungmeister and I placed second. That year also happened to be the last year for the Miami All American Air Maneuvers.

The Buecker-Jungmeister (designated a Bu. 133 Jungmeister) was a development of the Bu. 131 Jungmann, likewise a single-strutted biplane but equipped with an in-line engine. Other than the powerplant arrangement and the fact the Jungmann was a two-seater with dual controls, the two planes had much in common, for in the interest of economy an attempt had been made to provide for parallel construction. About 30 per cent of the components in the

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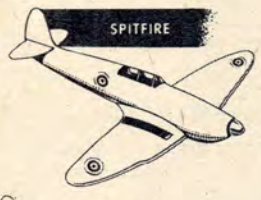

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two patterns are similar. And in the course of production approximately 70 per cent of the jigs and templates could have been applied to both models.

The Jungmeister was originally powered by a German Siemans Sh 14a seven-cylinder radial engine rated at 160 hp. Performance data with that engine installation showed that the plane was capable of a cruising speed of 125 mph and a range of 310 miles. Rate of climb was reported over 1,000 fpm. Ceiling was given as 20,000 ft. The present engine is a Warner seven-cylinder 185-hp radial, which I installed in 1948 when replacement parts for the Siemans became impossible to obtain. Naturally, with this engine the plane's performance increased. Due to a change in seating the cowling over the Warner, the frontal area is slightly larger.

Wingspan of the Buecker-Jungmeister is 21 feet, 7 inches. Length is 19 feet, 4 inches, and height 7 feet, 4 inches. The angle of incidence of the lower wing is negative, and the upper wing is one degree. The bottom wing has a dihedral angle of three and one-half degrees, and the top wing one and one-half degrees. Wing loading is about 10 pounds per square foot. Both top and bottom wings are swept back 11 degrees and, incidentally, the upper and lower wings are both equipped with ailerons and the two wings are interchangeable.

The fact that both top and bottom wings sweep back contributes greatly to the plane's snapping qualities—it can accomplish up to four snap rolls in a relatively small arc of the nose. Also, turning ability is excellent due to the double ailerons and the short span. Control effects, moreover, are carefully balanced one against the other.

The wings are constructed of wooden ribs, wooden spars in joist section, standard internal bracing and streamlined steel struts. The fuselage framework is made up of welded chrome molybdenum steel tubes. The engine bay and cockpit are covered by sheet iron. Control surface structure is also of welded chrome molybdenum steel tubes. The entire plane in 1948 was recovered

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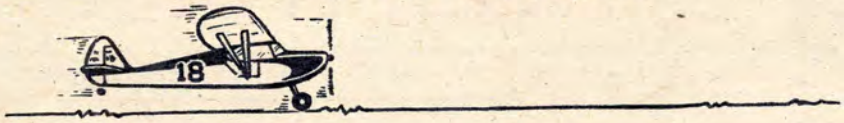

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The undercarriage features a divided landing gear, balloon wheels and brakes. Oleo legs have a helical spring dash-pot. The spring tailwheel may either be coupled with the rudder for steering or adjusted to turn free, at the option of the pilot.

One of the most remarkable features of the Buecker's superior flying characteristics is the plane's inherent stability about all axes and for all C.G. positions, even with hands off the controls.

I think most pilots who have flown the Jungmeister, and who have literally "wrung it out," will agree that the plane's design makes it outstanding for aerobatics. It must also be remembered that this airplane has consistently finished "in the money" in every American and foreign aerobatic competition entered since 1936. No other airplane designed primarily for aerobatic flying can boast such a record.

Western

(Continued from page 60)

model builders. Hats off to guys like Sal Taibi, Les MacBrayer, Denny Davis and Russ Gass and Chuck Adkins who spent the entire week working for you, to Lo Salisbury who didn't compete in the Wakefield event, Andy Peterson who sacrificed his chance in unlimited rubber, Bill Thorp (towline), Don Donahue (rubber payload), Bob Swenson (stunt and combat), Leighton Conrad (team racing), just to name a few; if there could be any greater sacrifice for a model builder let someone name it.

Dick Schumacher put in a tiresome six

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days at his specialty, radio control. F. L. Swaney had ROW's and gliders in the air before most guys were up. Bob Holland had indoor models up after most guys were in bed, ably assisted by Bob Wiele, and George "Whotta Cargo" Gardner who rushed out and got some greenstuff when he learned there were so many entrants in rubber payload.

Now the Navy. Capt. Drew must have been the first Southerner for the hospitality he showed the model builders must have started that phrase "Southern hospitality." It was very apparent from that super organization and those wonderful officers why we have the world's best navy. It would be impossible for any gang to play hosts in any greater way. To Lcdr. Coleson, Lcdr. Meadorr, Lcdr. Francis, Lcdr. Reister, Lt. Cherniss, to Lt. Carroll, Lt. Bennett and Lt. Miller—thanks for so very much help; and thank you, enlisted men and CPO's—you all made the contest the best ever.

How you fellows learned so much about models in so short a time we will never know. Your views and comments were well appreciated. One thing for sure, you'll never find a contestant knock the Navy.

The indoor site which provided a ceiling so high that no one hit it with a glider saw the Western boys break every hand-launch record. Joe Foster, Jr., of San Jose had to take second trials to better the open record which he tied for the second time during the contest. Jerry Robertson of Phoenix broke the Junior record, while Don Alberts of Aubuquerque took honors in the Senior division.

The Cummings family got off to a big start with their "mike" jobs and soon had two records salted away, Frank Cummings III winning and setting a new "C" record while brother Ronald set a "B" record. Nothing left to do, pappy Frank trotted out his cabin job and proceeded to knock all opposition aside to total well over 21 minutes to win this event. In the meantime that grand old Wasp man, Bill Atwood, cruised leisurely around for almost 28 minutes to beat out Joe Foster for the stick title, some mighty long flights.

The regular free flight gas events produced no real record threats even though winning times for each event except B produced times of over 23 minutes in each class. One performance not to be overlooked was the feat three San Diego fellows accomplished in winning the first three places in Half-A gas. Nat Antonoli, first; Les Bartlett, second, and Ken Brown, third —truly an amazing feat. Wally "AWOL" Short showed his heels to the open gang to outstrip more contestants than in any other event to win Half-A open.

The ROW events proved to be the biggest record breakers with Bruce Tune smashing the Junior A/2 record by nearly 15 minutes. Frank Pollard set a new A open record, E. W. Allen A/2 open, Elmer Scaggs B open, Ed Mate A Senior, Bob Gelvin, A/2 Senior. Altogether six new records. The lake which the Navy created proved to be ideal, plenty big, lots of flights. Several fellows were up to records and had a real chance of winning, only to flop out with a third flight of 1½ minutes.

The speed boys really burned up the air, top flyer being Mark Brown whom we still lay claim to even though he is in the Air Force. Mark turned in as close a grand slam as possible without actually accomplishing the feat, winning Senior A, B and C, then being forced to second in D. Some real hot flying.

Violet Hoyt, that little gal from San Diego, did what so many thought impossible by winning jet speed in a very nice speed of 144 plus. We are real proud of this gal, she's a hot flyer.

Class A speed found record holder George Muller of Phoenix-Tucson in front of the pack with 131 plus, a short distance in front of Tom Baker, late of Tripoli. We were very pleased to see George win this since so many guys have been doubting his fast A times. Now do you believe it?

Class D speed found the fastest going as the guys soon discovered. Bill Wisnewski sweated out some close runs the entire day only to have that fast WAM guy Herm Shiman turn in 150 plus to nose him out. Biggest disappointment was Jim McElroy's

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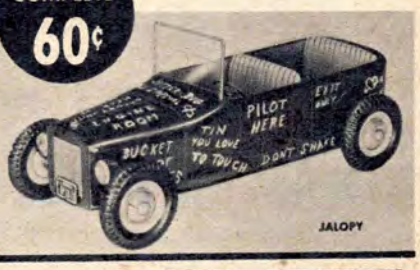

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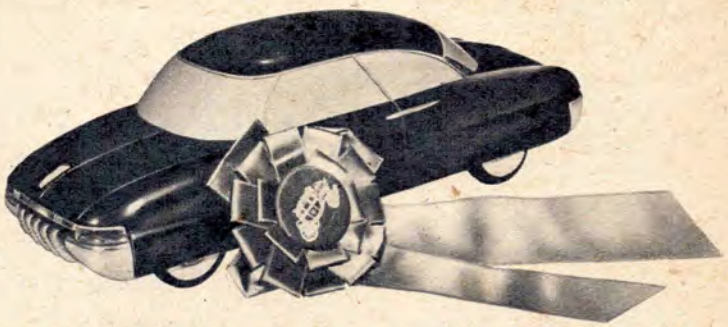

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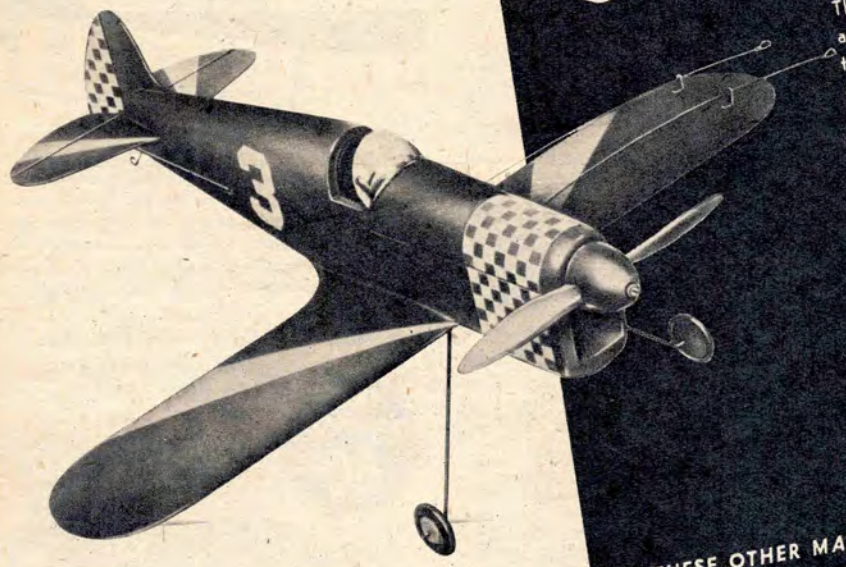

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super fast run pulled down to 146 plus when his tank ruptured on his fourth lap. It was estimated by the guys who know that Jim was turning close to 160 when this happened. Of course he couldn't do it again. The engine had hit its peak.

Going back to free flight, John Bollinger, Jr. was a mighty good winner to the rest of us in Sr. towline. Marv Foreman exhibited his 14-foot job for another first place (we told you so). The Phoenix gang flew "El Lobos" to two firsts in land launch, also several places. Most impressive unorthodox glider was Harry Robertson of Phoenix's flying wing. Harry turned in three swell flights to win third place in the Senior division and set a new Class C record.

For stability under tow and glide this wing was super. Watch for it in this your favorite mag at some future date. Wayne Ross flew an AT design competition Nordic A/2 for some beautiful flights, but flew too late to do any good. Tom Heneby flew an original Class C job to a new record in the open division.

In rubber the Western fellows had to take a back seat to a couple of Eastern upstarts, Frank Heeb of Connersville and Dick Querman who won the Wakefield. Needless to say we did manage to win the Senior and Junior divisions. Don Tune turned in a very creditable twelve minutes plus to win Senior Wakefield.

Back to control line, the stunt boys had it hot and heavy with John Lenderman nosing out Bob Palmer by two-thirds of a point. When we learned we couldn't beat George Aldrich we got him to move out West, thereby winning Senior stunt also. A real good move.

In team race that man Granger Williams flew his super-beautiful all-metal team racer to first place, nosing out Don Chinn by a quarter lap. Cliff Potts pulled this time to burn out a glow plug and wind up 4th. George Barker waited for two years to pull down the 3rd place trophy.

Combat found the fellows willing and ready, plenty of crashes and near wrecks before Davis Mallory won the open division.

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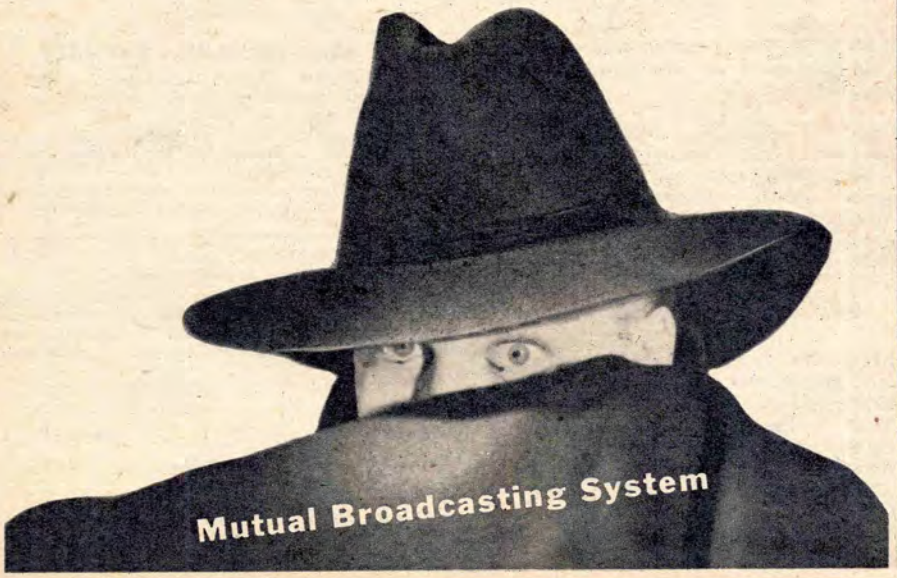

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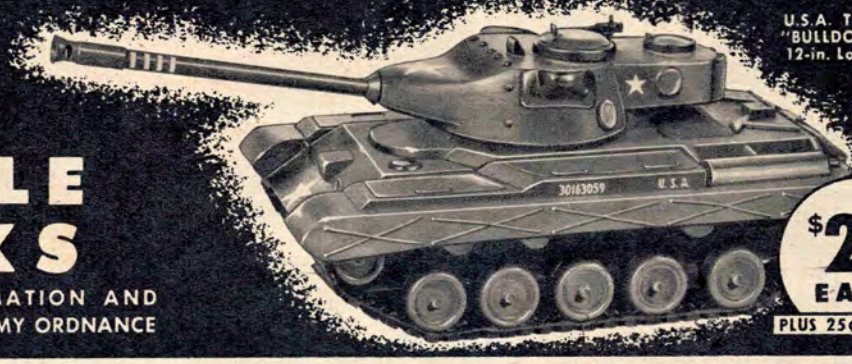

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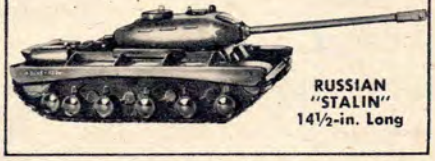
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The carrier deck event saw more guys put in good flights than ever before, with that jet man, Don Yearout, topping all comers with 388 points. Barry Robertson was high for those 17 and under and was commissioned skipper of the *USS Small Fry* for the coming year. There were even Half-A jobs there, Mr. and Mrs. Ray Randell winning the A/2 class with a real nice flight for such a small ship.

The PAA events were very well contested, more entrants in A/2 alone than in all events at Dallas last year. Dick Sladek came out with highest time of the entire meet to win A/2. For some reason or another we allowed the fellows from Detroit to win Junior-Senior A/2. In A-B we really cleaned up. Fran Uyematsu nosed out Dan Luty by less than one second. Clinton Merrill won Junior-Senior. In rubber-powered PAA, Mal Alberts won first followed by Dick Sladek and Fudo Takagi. P.S.: best we could do in Clipper Cargo was 5th. Wot happened!

The individual and team championships were all won by Westerners. Joe Foster with some real assist by Pat Hall and Babe Massey in D speed, beat out Ray and Edith Downs for Open and National Champion. Barry Robertson won the Senior division, while Don Puskavich of Oildale was Junior champion.

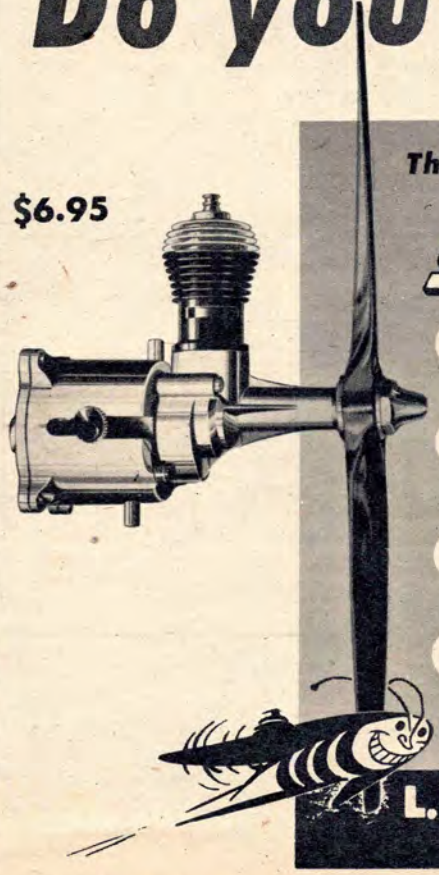
The team championship was the hottest in many years, with only 70 points of a total of over 1500 separating the first five places.

Here, the Oakland Cloud Dusters nosed out the Frisco Vultures "A" team by only two points. Needless to say this required several checks to make absolutely sure that it was true. The point system worked swell, the guys all getting points for everything they did.

We thoroughly enjoyed this year's Nationals which contrary to many predictions was the second largest ever held in its 21-year history. We have never worked so hard or had so much pleasure doing it with a lot of swell fellows.

—DICK EVERETT
Meet Manager, 1952 U.S. Nationals

Do you know?



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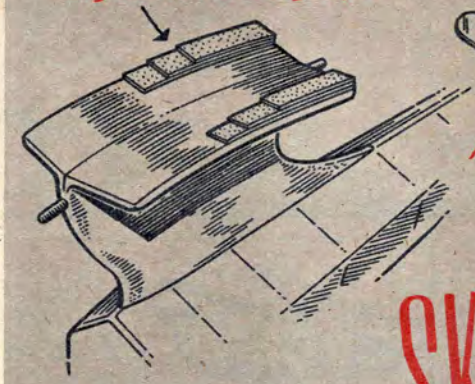
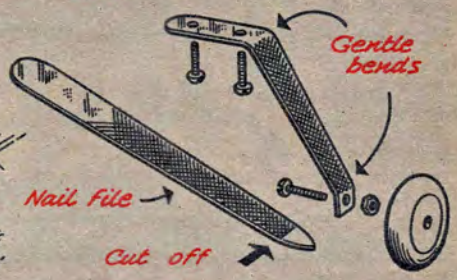
SKETCH BOOK

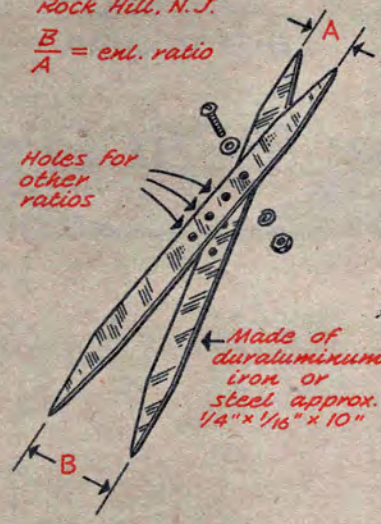
• Lynn Skinner, Danville, Va., prefers masking tape to balsa slivers for packing trim on wing, tail, engine mounts — Stays put, he says...

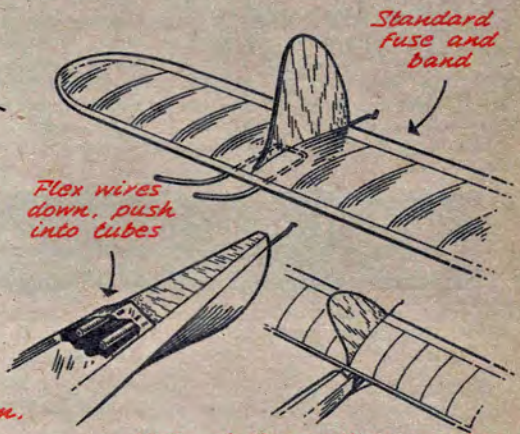


• Suitable for small freeflight and control models is this unique gear leg idea used by Leith Jennings, Toronto, Can.

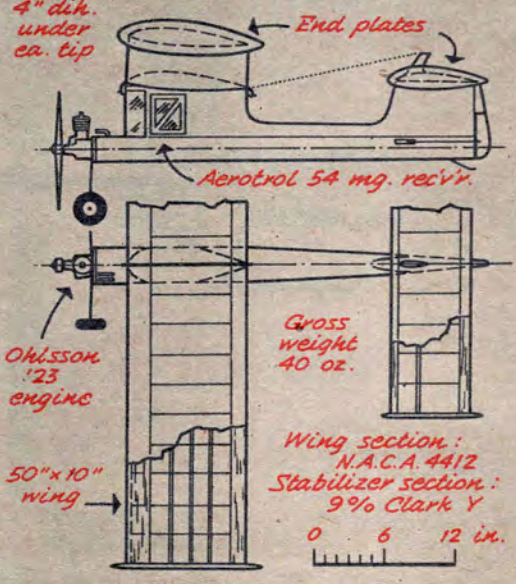


• Enlarging model plans is greatly simplified by use of these homemade proportional dividers. Constructed by: J. L. McLarty, Rock Hill, N. J.



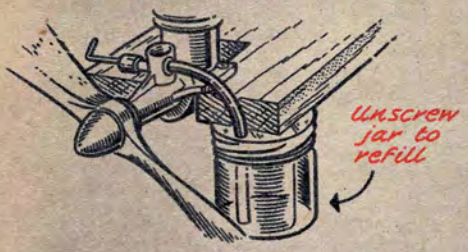


• Nifty dethermalizer requires no front hold-down bands — Submitted by Glen McHenry, Bremerton, Wash. Friction of curved wires in tubes holds stabilizer fast in dethermalized position...

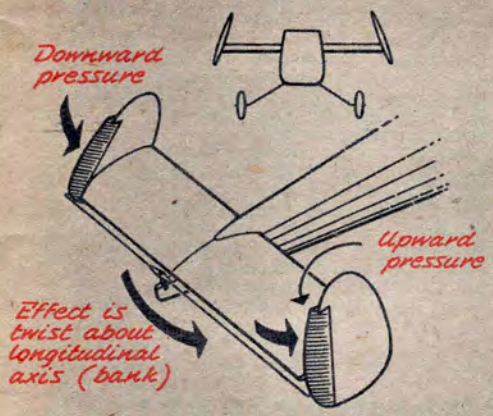


• "T" tail configuration and use of end plates on wing and stabilizer are key features of original R/C design by John A. Cochrane, Brentwood, Mo., who claims downthrust is more effective due to prop. blast under high stab. Adjustments to longitudinal trim by packing under stabilizer do not affect fixed fin tab settings...

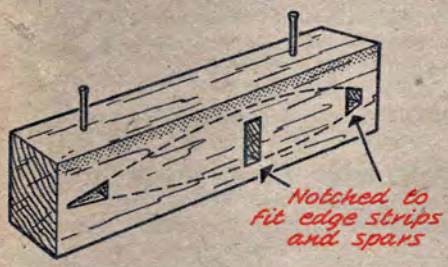
• Small jar makes large capacity break-in tank says Paul Wing, Holyoke, Mass. Lid screwed beneath mount...

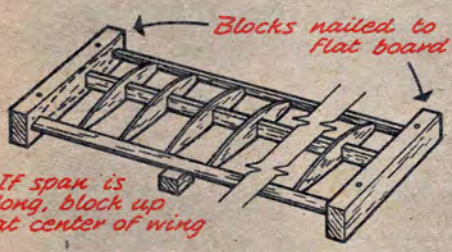


Have you developed something new in construction, control, or flying that might interest other modelers? Send a rough sketch—we'll redraw it and pay $5 for each one accepted. Sorry, we cannot acknowledge or send back any submissions.



• Lateral bank is automatic when R/C model turns, claims Jon Carlson, Mesa, Ariz., by using twin fins canted at inward angle. Arrangement would prevent usual skids, slips associated with "rudder only" control —





• Ted Orme, Chilliwack, Can., makes spar-holding jig blocks for easier assembly of stunt wing sections. Reduces warps

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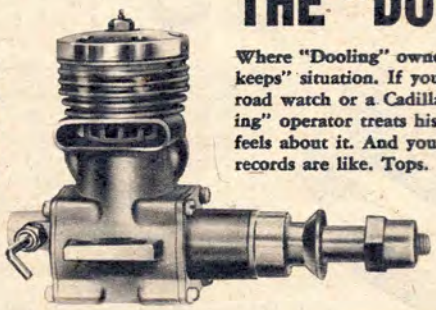

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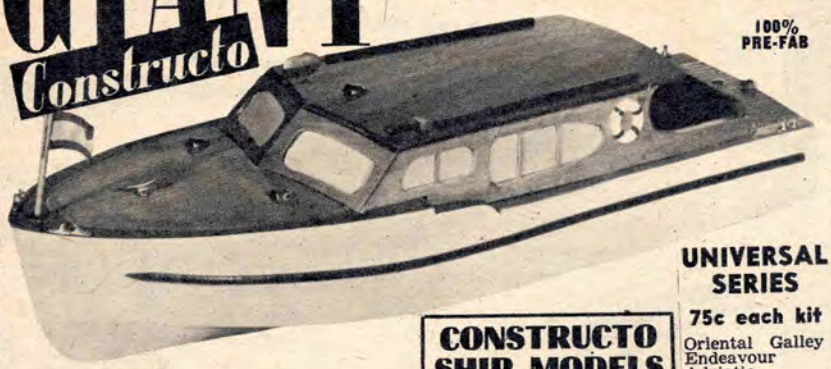

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CONCLUSION

There are many other possible control systems, most of them complex. One that is used with all sorts of variations is the sequence, or stepping-relay, set-up. Following the airplane receiver relay, another relay is connected which "steps," or moves a switch arm, one position for every pulse received from the transmitter. The arm makes electrical connection with circuits to operate rudder, elevator, motor speed control, etc., as desired.

Geared-down electric motors are normally employed in this connection, and are equipped with both the limit switches we have already mentioned, and also centering switches to bring the control surface back to neutral upon signal from the transmitter. The stepping relay can be arranged either to return to its resting position automatically, or to return upon a special transmitted signal.

Some such device as a telephone dial is normally used at the transmitter to send out the desired string of pulses. For example, one pulse could be right rudder, two pulses might be left. Three pulses could be sent for higher motor speed, four pulses for reduced speed, and so on. Though complex and relatively heavy, sequence-selection systems are very flexible and can give truly "professional" results.

A development along this general line has been used with great success by Jim Walker in contest and exhibition flying. He calls this invention the Muller Control, after the man who has perfected it. This unit actually is a combination of mechanical and electrical principles, and can be used in the plane to operate rudder and elevator surfaces, as well as engine speed,

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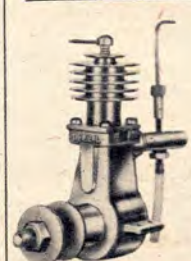

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R/C Control Surfaces

directly and without additional electric motors or other auxiliary apparatus.

A control stick is employed at the transmitter, manipulation of which sends out a series of pulses of various lengths. The selector in the plane translates these pulses into different degrees of movement of the desired control. It is expected that this equipment will be placed on the market in the not too distant future.

Up to this point we have talked principally of rudder control. It is possible, of course, to add another radio channel for use as an independent elevator control. However, use of more than one radio channel leads to complications of weight, interference and other problems, and most R/C flyers stick to a single R.F. channel. With the latter, however, it is possible to actuate five or six separate elements in the airplane; it's done by what is called "A.F. selection" or audio tone control. The transmitter sends out a continuous radio signal, which can be modulated at will by various audio tones as the operator moves his controls.

In one commercially available system (made by Rockwood) the transmitter can be made to send five audio tones, one at a time. In the plane four of these tones are utilized for rudder and elevator action (one tone for right rudder, another for left, etc.) and the fifth acts to slow down the motor.

Since Rockwood uses one tone for right rudder and another for left, it's handy to have a way of returning the rudder to center, or neutral, without sending a definite signal to accomplish this. A centering switch does the job, and limit switches are also fitted.

Modelers have stuck pretty closely to rudder control, though a few have

(*Continued on page* 72)

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3/32x3/8		2c
3/32x1/2		2c
1/8 x1/8	4	5c
1/8 x3/16	3	5c
1/8 x1/4	2	5c
1/8 x3/8		3c
1/8 x1/2		4c
1/8 x3/4		5c
1/8 x1		6c
3/16x3/16		4c
3/16x1/4		4c
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3/16x1/2		6c
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3/16x1		9c
1/4 x1/4		4c
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1/4 x1/2		7c
1/4 x3/4		10c
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5/16x3/8		6c
5/16x1/2		8c
5/16x5/8		9c
5/16x1		12c
3/8 x3/8		7c
3/8 x1/2		10c
3/8 x3/4		12c
1/2 x 1/2		10c
1/2 x3/4		15c
1/2 x1		14c
5/8 x5/8		15c
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2 x2	65c
½ x3	35c
¾ x3	40c
1 x3	50c
1½x3	70c
2 x3	90c
3 x3	1.35
1/2x4	40c
3/4x4	55c
1 x4	75c
1½x4	95c
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1/16x3	11c
3/32x3	13c
1/8 x3	15c
3/16x3	17c
1/4 x3	19c
3/8 x3	27c
1/32x4	15c
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2x3	16c
2x4	22c
3x3	23c
3x4	30c

12" Long

1x1	6c
1x2	12c
1x3	18c
1x4	26c
2x2	22c
2x3	32c
2x4	44c
3x3	46c
3x4	60c

18" Long

1x1	9c
1x2	18c
1x3	27c
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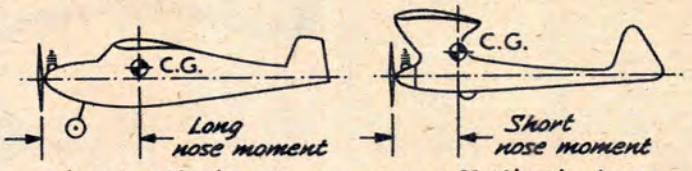
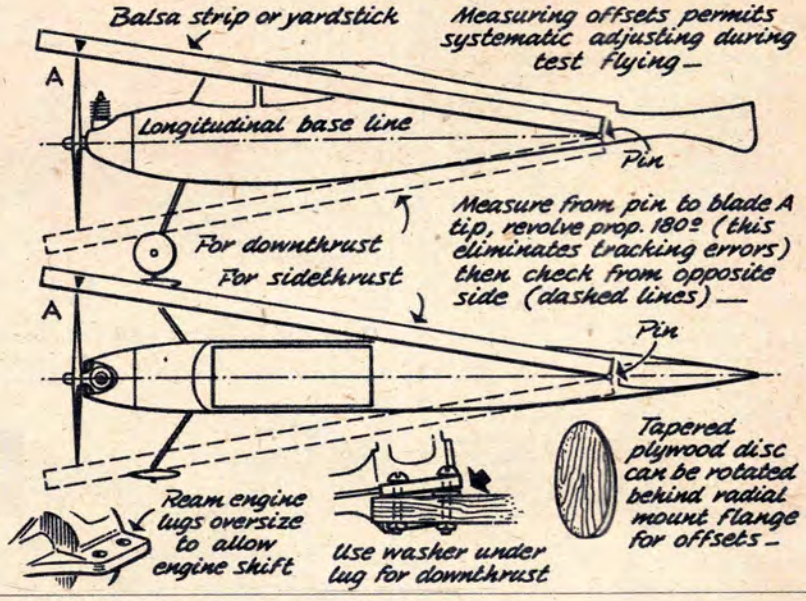
HOW TO measure thrust offset

Thrustline adjustments are important for control models, doubly so for free flighters. Remember: in a 6" length, one deg. means an offset of. approx. 1/16". Measuring the offsets as shown below is valuable; it permits reassembly after repair to precise adjustments used previously.



Thrust adjustments are more effective in long-nosed models... offsets have more leverage—


Balsa strip or yardstick
Measuring offsets permits systematic adjusting during test flying—
A
Longitudinal base line
Pin
Measure from pin to blade A tip, revolve prop. 180° (this eliminates tracking errors) then check from opposite side (dashed lines)—
For downthrust
For sidethrust
A
Pin
Tapered plywood disc can be rotated behind radial mount flange for offsets—
Ream engine lugs oversize to allow engine shift
Use washer under lug for downthrust

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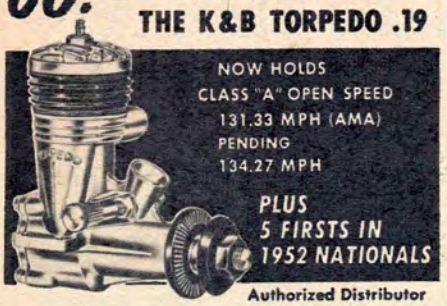

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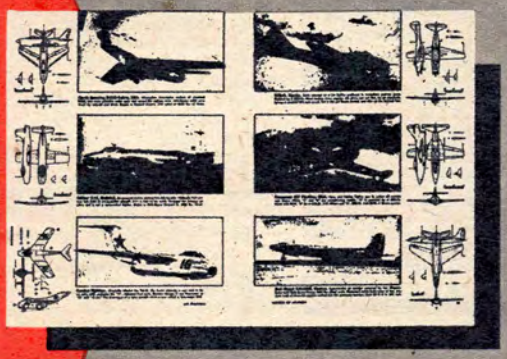

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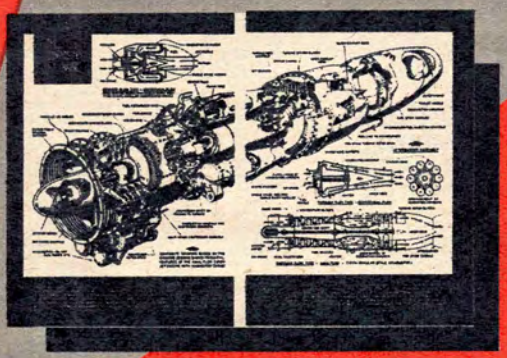

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(Continued from page 69)

experimented with elevators, and ailerons, too. The latter, used without any other controls on a plane, can offer very good results. With rudder control it is difficult to get a satisfactory range of action, so that the same degree of turn may be had in the glide as in power flight. The trouble is caused by the engine slipstream under power, and if you fly with an escapement or any other style of "one-degree" system, you have to decide whether you want a moderate turn under power with very slight turn in the glide, or adequate glide turn action, but oversharp turns under power.

One way out of this dilemma is utilized by Gene Foxworthy with his Hoosier Hotshot which appeared in AT; his twin rudders are set far enough out on the stabilizer to be fairly clear of the slipstream.

Getting back to ailerons, they too are unaffected by slipstream; besides this, they offer interesting possibilities of stunts such as rolls and Immelman turns that are pretty difficult if you use only a rudder.

Control of motor speed should not be neglected. It is quite simple, and has been developed satisfactorily for glow-plug engines. The use of spark ignition is a natural for engine-speed control or cut-off, as it is so easy to open and close the ignition circuit. If you connect your receiver sensitive relay contacts directly in series with the ignition primary circuit, and pulse the transmitter with the gadget shown in Fig. 10, you will have the most beautiful motor speed control you could imagine.

Any of these ignition circuit systems can be adapted to glow-plug motors by means now too well known to require description here. If you don't know how, check up on the engine speed or cut-off controls used by the controline team racing enthusiasts and stunt flyers.

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½" dia. hub, .140 shaft hole.... 15¢
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7" dia., 2-3-4" pitch
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¾" dia. hub, 3/16" shaft hole.... 25¢
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Wide tip model, more blade area than series 15 • Free Flight, Controline, Speed-engines .035-.35
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⅜" dia. hub, ⅛" shaft..... 15¢
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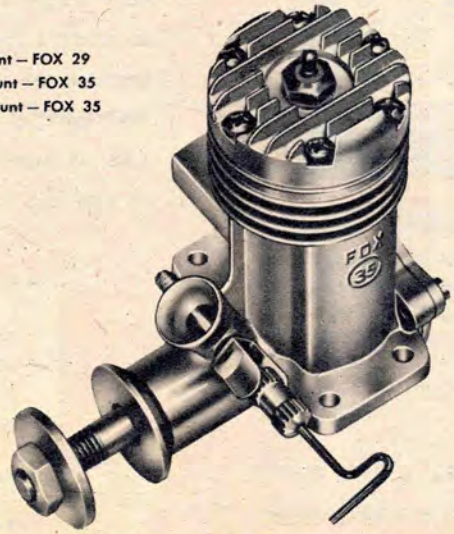
JOHN LENDERMAN — 1st — National Open Stunt — FOX 35

Technical Data:

FOX 29
Bore: .738
Stroke: .700
Bare Weight: 6 oz.
R.P.M: 9500 with 10-6 prop.
Fuel Suction Tests: 15 inches variation
Compression Ratio: 5÷1

FOX 35
Bore: .800
Stroke: .700
Bare Weight: 6 oz.
R.P.M: 10,000 with 10-6 prop.
Fuel Suction Tests: 15 inches variation
Compression Ratio: 5÷1



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152—Art Chester Racer U/C flying scale; Hot Canary jet speed; K. C. Cutie semi-scale F/F; Do'no' F/F A/2.

1251—Bourgeois' Jezebel team racer; Storey-Willard F/F low wing Korker; deBolt's Half-A Twin semi-scale U/C; Stits Junior, C/L scale.

1151—Douglas Mailplane F/F Half-A; F/F Glutton; Half-A Stunt Chum; ROG-ROW combo sport F/F.

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851—Screamin' Demon speed job: Nordic towline glider; Jetex One1 scale rocket F/F. Tiny Tim tether or U/C Half-A; Pushie, beginner's rubber stick model.

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Accurate ½" scale reproductions . . . finest of their kind! Average wing span 18". Super-detailed 'cinch to follow' plans; cut-to-shape Wings, Stabs & Rudder plus All Hardware! Value plus!

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24" span
150 sq. ins. wing area

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with 21 self aligning slots

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APPROVED BY A.M.A. CONTEST DIRECTORS

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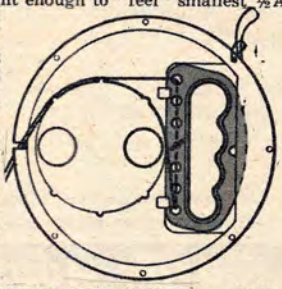

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Now Available! HANDY SAFETY THONG. . . . 90 lb. pull test, nickel plated, adjustable to wrist size, all metal construction..... 75c each

commonly used control devices. For example, some escapement users, especially those employing the four-arm unit described previously, have fitted a pair of contacts positioned to close only when the escapement wheel reaches one of the half-positions. So that the motor doesn't skip or cut every time the wheel passes this position durnormal rudder use, it is usual to connect the extra contacts to what is known as a thermal cut-out, a very lightweight device that actuates the engine circuit only after a delay of a predetermined number of seconds. Some thermal units open their contacts permanently, others close again when the unit cools off.

The thermal unit is made as shown in Fig. 12. A small heating coil causes a bi-metallic strip to bend and so open (or close) the contacts. It is quite practical to connect the heater element directly across the escapement coil. Then the cut-off will operate any time the escapement circuit is held closed for longer than the set period of time; such connection is hard on the batteries, though, as the heating element draws quite a bit of current. A thermal cut-off can be used with 2-arm escapements in this manner, or a set of contacts can be added to operate the cut-off in one of the two neutral positions.

There are so *many* variations and combinations of control system elements. Even using the few we have described, the ingenious builder will see adaptations that we have not mentioned. Whereas there are a variety of radio systems now on the market, those builders who want to try most of the control systems we have discussed will have to build their own, for aside from escapements and a few other items, the necessary elements are not offered commercially. Most pioneer radio control men feel the surface has only been scratched in control systems.

—HOWARD MC ENTEE

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Every little detail visible in the actual airplane, every single item that can be reproduced is given to you.

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P-40 Warhawk	2.75	F6F Hellcat	2.75	ME-109 Messerschmitt	2.75
		F8F Bearcat	2.75		

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The Facts . . .

(*Continued from page 20*)

not promise, within the forseeable future, to operate reliably at such distances.

• The interceptor scheme insures more positive location and identification of enemy aircraft. The sonic interceptor's equipments may be far less susceptible to enemy electronic countermeasures. Human observation—and confirmation—of the results of the attack would be insured.

• The automatic interceptor scheme is far cheaper, making for economy of effort as well as dollars. The AAM carrier, expensive though it may be initially, can be used time and time again, like any other type of airplane which survives combat damage. Its smaller missiles represent only a fraction of the cost and man-hours of production inherent in the bigger SAMs.

• Tactical flexibility. There remain a number of refinements in the interception scheme and tactics described in the main article. The complete Baker Flight of 25 planes could, if need be, be made entirely automatic. Using "radio link" techniques only slightly improved over those used for the control of pilotless drones today, three or four AFCs could take and land the whole flight or even a squadron. Two or three additional controllers would be required, however, at locations close by the runways for effective take-off and landing control. (And a pilot or crew chief would have to make the preparatory settings and check-offs prior to starting, and actually start the turbojet of each drone.)

Telemetering equipments now in use would provide the controllers with sufficient flight information for remote control of all the drones. Radar sighting gear could be hooked up to take over control of the ship's auto pilot when the target was detected, "lock onto" the target, and fire the missiles at some predetermined range. Or, the missiles could be triggered remotely by the AFC on ground via radio signal.

• In still other applications, pilots on long-range escort missions could forget navigational worries, relax, and be "ferried" by AFC equipment in one or more of the accompanying bombers. At the scene of combat they would take over manual control. Then the fighter pilots could join up and be ferried back to base. This technique would be especially provident for pilots who might be wounded during combat. So

Statement of the Ownership, Management, and Circulation required by Act of Congress of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233), of Air Trails, published monthly at New York, N. Y., for October 1, 1952.

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ARTHUR P. LAWLER, Vice President
Of Street & Smith Publications, Inc.

Sworn to and subscribed before me this 30th day of September, 1952, Edward F. Kasmire, Notary Public No. 60-2039700, New York County. (My commission expires March 30, 1953.)

long as their planes flew normally, they could be "retrieved" after the mission and flown home by a mother plane.

• There is the distinct probability of joint USAF-Navy use of the sonic interceptor scheme. Craft such as the Fury and Skyray may be handled by Navy AFCs aboard carriers. The planes could be landed by means of the FM radar technique used in the CCA (Carrier Controlled Approach) technique now operating on our flattops.

FOR YOUR INFORMATION

• The giant 1952 Autumn edition of America's Hobby Center, Inc., 128-page two-color catalog is now ready. It features pictures and descriptions of more than 10,000 model items, including engines, gas and rubber powered planes, boats, cars, radio control and accessories of every kind. There is a list of replacement parts for popular engines and a series of articles covering model plane building and flying. The catalog lists for 25c and is available from America's Hobby Center, Inc., 156 W. 22nd St., New York 11, N. Y.

The firm reports that last June marked its 21st year and that the millionth catalog was sent out this season. It is interesting to note that the original catalog consisted of a single sheet 8½ by 5½ inches and listed 30 items.

• "Polk's Shipyard" in its latest edition presents 170 pages of ship model kits and fittings. Like the previous editions, this giant catalog is a comprehensive encyclopedia of nautical models. In addition to showing almost all of the existing ship kits and accessories, the Polk compendium contains a chapter on "Helpful Hints to More Enjoyable Ship Modeling" and an extensive and useful nautical dictionary. The booklet sells for 50c with a 50c redeemable coupon contained within it. Polk's, 314 Fifth Ave., New York 1, N. Y.

• The Electronic and Hobbycraft Stores (main store: 130 W. Chelten Ave., Philadelphia 44) has a new A-B-C Catalog of 10,000 items within its 60 pages on airplanes, boats, crafts, educational and imported toys and vehicles. Also covered are stamp collecting, photographic and optical equipment, artists' supplies and drawing materials. Many helpful charts and data. 25c.

Towliners

(Continued from page 40)

large. With some experimenting with tow hook position, the overhead tow resulted.

The main difficulty with this model, "El Sobo I," was an erratic flight attitude. The ship contrarily would take off cross country after circling merrily in thermals for quite some time. This was cured by moving the C.G. to 50% chord and decreasing the horizontal tail area to some 23% of the wing. *But* as all good things tend to do, a bigger factor was inserted—the ship went up to 10 ounces overweight. So a new wing was built, *but* in order to balance this out the C.G. had to be moved to 30% which again pushed up the weight. This condition again resulted in a touchy tow attitude—which, however, did not stop the model from winning the Nats in Dallas. After Dallas it was decided to build a longer fuse, 12 inches more.

The first one was even heavier than the pod and boom, so if someone wants a 60-inch fuse weighing 32 ounces, contact the author; it hasn't even been hand glided. The third fuse built came out to an overall all-up model weight of 41 ounces, just a mere seven over, so we flew it. Initial tests with our six-year-old son Dale launching proved real good once we got down from a 6 degree angular difference to 3½. In its first contest the results were not so hot, the only comments being of the "a nice looking ship" type.

Subsequent placing of towhooks resulted in very impressive flights in Tucson where "El Sobo II" totaled some 21 minutes for first, just missing the record due to a wind shift on its first flight and a short fuse on the third when the second record was cinched. At Phoenix it again triumphed in a gale so strong that on one flight we broke the 48 pound test Nylon line.

MODELPLANE CONTEST CALENDAR

Meet directors are invited to list forthcoming competitions in this column. Advise Air Trails 90 days in advance to do the most good for your meet. If any area restrictions on entries, be sure to state. Address of contact man is same city as site of meet unless otherwise specified. Where info on events is furnished these are abbreviated as follows: indoor rubber powered—IR; outdoor rubber powered (unlimited)—ORU; outdoor hand launched gliders—OHLG; indoor gliders—IG; towline gliders—TL; free flight gas—FF; control line speed—SP; control line scale—CLSC; control line stunt—ST; team racing—TR; combat—COM; radio control—RC; rise-off-water free flight—ROW; carrier models—CAR; free flight scale—FFSC; non-flying exhibition scale—NFSC; jet speed—J; control line endurance—CLEND; Wakefield models—WAK.

Oct. 12—San Bernardino, Cal., Flying Wheels FF meet. T. E. Huston, 1467 Barton St.

Oct. 12—Bakersfield, Cal., FF record trials. Francis Stewart, 900-21st St.

Nov. 9—Bakersfield, Cal., FF record trials. Clinton Merrill, 212 Washington St., Oildale.

Dec. 14—Bakersfield, Cal., FF record trials. Francis Stewart, 900—21st St.

Dec. 27-30—Orlando, Fla., 3rd Tangerine Internationals. Box 123, Orlando.

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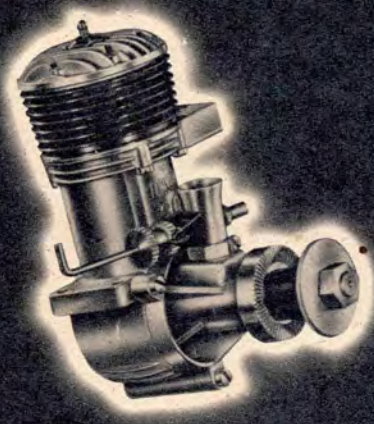

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A report on the latest developments in . . .

The Year's Most Popular, New Accessories

The past year has field-proved an amazing model material . . . Dupont Nylon.

Amazing nylon is ideally suited for the model field. Nylon is ten times as strong as steel, yet is one-tenth the weight of aluminum. Because it is molded, it can be formed in any thickness, with strength added only where it is needed. It is fire-proof, fuel-resistant and crash-proof. It has no sharp edges to cut or wear flexible lead cable or other parts. Known as the "material with a memory," it can be bent, but always returns to its original shape.

Fabulous nylon was introduced to the model field through the research laboratories of Sullivan Products, who engineered many amazing improvements into their nylon accessories. The improvements created a minor revolution in the model field. For example:

Take the nylon bellcrank. Here was a long awaited answer to an irritating problem. The acceptance of the nylon bellcrank has been phenomenal, and has completely outmoded former type bellcranks.

Or take nylon spinners. Field reports are steadily coming in on them, and here are the main points: ease of operation and proven crash protection for your engine. And the extension spinner is a big improvement for the short-coupled engines of today. Even in free-flight, these extension spinners are saving many fingers.

Another sensational item, although a temporary departure from the nylon line, is the Pylon Brand Starter. It gives you the necessary few fast turns to start any job, including a pressure feed job or a diesel. And the new wound cord completely eliminates wrong winding and subsequent spring breakage. (Watch for a starter with a new nylon overriding clutch to be introduced soon.)

All these items have served as an introduction to the wonders that are possible with nylon. Now that nylon has been unquestionably accepted as an outstanding model material, look for some very revolutionary ideas in the near future. Ideas that are revolutionary in that they'll be different from anything you've ever used. And model builders will recognize them as the next logical step in their problems of model prefabrication.

Dupont nylon accessories are manufactured by Sullivan Products, Philadelphia, Pa., manufacturers of Pylon Brand wire and accessories.

advertisement

SHOWCASE

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Three additional Jigtime models have been marketed by Top Flite Models of Chicago. These little 59¢ flyers are 100% prefabricated and they really do go together in "jigtime." Latest are Arrowjet, resembling F-86, the Navion and Luscombe personal transport aircraft. In two-colors, they're pre-painted.

"U.S. Fighting Planes—1952" is title of Arco Publishing Co.'s new pictorial album of fighters, $2. Written by Lt. Cmdr. Dale W. Cox, Jr., USN, the photos are all government pictures. Includes section explaining military aircraft symbols, aeronautical terms. Covers Army, Navy, and Air Force craft.

MILITARY AIRCRAFT

COMET'S CRAFT

Comet Model Hobbycraft's "P" line of flying and flying scale models at $1 apiece includes jobs from 24 to 54 in. wingspan. Shown here is Grumman F6F Hellcat. Others in series include Mustang, A-26, P-47, P-38, Clipper Jr., Pepper, Taylorcraft, Aeronca, Piper Cub, Gull and the F-86 Sabre Jet.

Newest model in the Constructo Nautical Miniatures set-up is the Schooner, 20 in. long and 21 in. high, retailing for $9.95. Hull finished and sanded, sails sewn and stitched. Step by step instruction. All needed parts are also a part of the kit. A mounting cradle is given, too. Good way to start boating.

KOREAN KILLER

Two tanks with service in Korea and boasting rotating action gun turrets have been kitted by Mercury Model Airplane Co. U.S. Army's General Patton (illustrated) and Russian "Marshal Stalin." Each sells for $2.95, is prefabbed, has die-cut balsa parts, metal bogie wheels and gears, die-cast lights & guns, color decals.

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STERLING'S 2-CLASS STUNT-COMBAT

Sterling Models' Matt Kania has come up with "Space Kaydet" for A and A/2 engines. $2.25. Matt says it's just the job for stunt and combat work. Span almost 24 in. Customary Sterling style of prefabbing—major parts die-cut; wing edges shaped and notched. Wire landing gear is formed.

"AT" DESIGN KITTED

An "AT" model design that made good in a big way is Bob Palmer's Smoothie stunter which has been kitted by Henry Engineering Company (Veco). Span 52 in., has wing area of 501 sq. in. including flaps. Takes engines from .29 to .35, weighs when finished around 32 ounces. Placed high at Nats.

Following their basic principle of modern packaging—full visibility and a usable package—X-acto now offers a series of knife and tools set in transparent plastic cases and called "Vizidome" kits. The knives, blades and tools are nested in a black plastic base and covered with transparent "dome."

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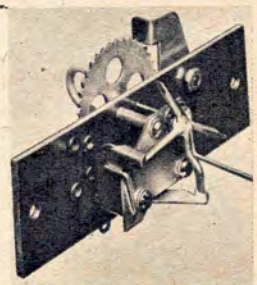

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Dope Can

(*Continued from page 54*)

considered to keep a lot of fellows from even thinking about racing if the local club or group of flyers isn't red-hot enuf on T/R to build one. Our friend from Bremerton claims it's entirely possible and practical to launch the models manually by putting the fastest ship first on the outside, instead of on the inside—thus no lines get fouled.

We're gonna let you racing fans take it from there. But the T/R experts at the Nationals did admit pretty generally that something must be done to encourage the new aeromodeler. We think combat may help break the ice and ease a few more recruits into the team race circle, but a special class with fewer requirements seems like the answer.

Over to You. William L. Cline is a long-time Air Trails fan, has every issue from August 1943 up until December 1950 when he joined the Air Force. Hez willing to pass on these copies to anyone who will pay the postage involved. Details from Bill's Dad, Lloyd Cline, 534 Wallace St., York, Pa.

Lewis G. Cooper of 93 Batsford Rd., Coundon, Coventry, Warwickshire, England, is full-scale aviation fan, has both British and F.A.I. pilot's license. Would like to contact licensed air enthusiast in this country especially interested in sports flying, aerobatics, air racing and competitive flying. Has 5 hours on an American ship, a Cessna 120 while with the R.A.F. in Southern Rhodesia. Wants to swap air mags, photos and the like.

Wants new Burgess M-5 engine: Pvt. Joseph H. Carlson, U.S. 55187531, 226th Sig. Sv. Co., APO 301, c/o P.M., San Francisco, Cal. Sure, he'll pay for it.

Noel G. Brown, Far-Away Farms, St. Francis, Kan., has almost new O.K. Cub .099 with prop and fuel tank, wants to get into something bigger in .19 or .23 glow range, not too badly worn. Any takers?

Brian Hall, Apt. 7, 2945 Barckley Ave., Montreal, Quebec, Canada, lost his DeLong .30 out of sight—the timer stuck. So now he wants to buy another in good condition. You got?

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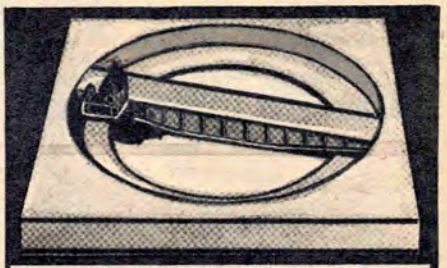

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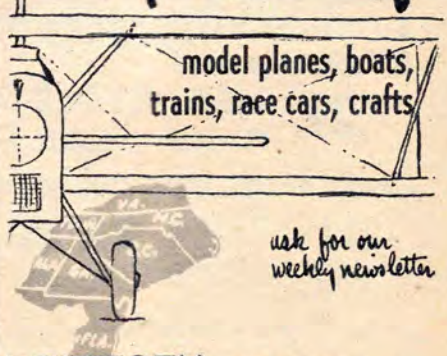

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of the late Paul Guillow. It stands 45 inches high. The base is hand rubbed walnut and the engraving plates, trim, bowls and figures gold colored metal. A large plate on the front can accommodate winners' names for many years.

We Hear from Harold. "Last year a lad from Norway by the name of Knut Hager visited this country. Knut is 20 and came over on an exchange deal with the C.A.P.," writes Harold deBolt of Williamsville, N.Y. "While here he spent considerable time touring the country with the CAP and saw what was going on in full-scale aviation from coast to coast. After this tour he spent a few weeks with his relations here in Buffalo and it was during this visit that I met him.

"The interesting thing about Knut is that he is a fine modeler as well as a licensed pilot. He was the national model champion of Norway in 1950 and has been on their Nordic glider team several years placing as high as third on one occasion in the world championship finals. While here he taught me a great deal about towline gliders which I never dreamed about before; also he built a control line stunt model and proceeded to learn the stunt pattern with considerable ease. He only had one opportunity to enter a contest but managed to take first place in Half-A free flight with respectable time

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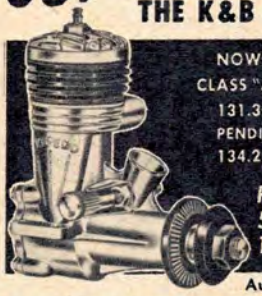

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after having built the model from scratch at the last moment!

"Knut had to return to Norway last fall and at last report was about to do his turn of duty in their Army. In the interval however he built quite a few models and managed to become meet champ at the only large contest held. I get a kick out of how well he was able to use our American materials and as he said himself, 'It sure takes the work out of modeling and makes it a cinch to have success'."

In the event any of our readers would like to correspond with Knut, his address is Thueveien 2, Teie, Tonsberg, Norway.

The Grass is Always Greener . . . "Flying Saucer on a Leash" was title of photo spread included in the Detroit *News'* Sunday Pictorial section. All about 30 inch circular shaped control line model by an Italian aeronautical engineer. Flying saucer stuff, etc., etc.

Actually the craft was pretty crude by American standards. And as for U. S. circular shaped control line craft—why, you should have seen the 5 going around at once during exhibition time at the National meet.

Florida Vacation. The third annual Tangerine Internationals, largest mid-winter model airplane meet of its kind sponsored by the Exchange Club will be held December 27 through 30 in Orlando, Fla. Entry blanks may be obtained by writing Box 123, Orlando. AMA rules will be the order of the day; 155 trophies are a big talking point.

Quite in Keeping, Wot? Fashion note for model meets: when John Susaywick of Philadelphia won the first place beauty award at the annual National Capital Model Air Show at Andrews AFB he was presented with his trophy by motion picture actress Joan Blondell.

Hey, psss-s-t. Looka this, came in addressed to Nick F. Davis, Air Trails, 304 etc. from the Douglas Aircraft Company, Inc., 3000 Ocean Park Blvd., Santa Monica, Calif. It's the "C-47R4D Model Plan Scale ⅛ in. equals 1 ft." Now aint that a mighty purty plan for a scale model builder? Wonder if Douglas has more? Why don't we write? Why don't you write? Why don't we all write??? By the way, wonder who Nick is—hmm-m-m?

Air Scouts in Queens, N. Y. Good news for New York City model aero fans who are active in the Boy Scouts. There's a very busy Squadron 303 of the Queens Air Scouts. Data on doings and membership details from Robert S. Pedersen, 10708 Liberty Ave., Ozone Park 16. (Phone, VI 3-7075).

International Records. We managed to secure a set of official F.A.I. modelplane records as approved last June. We know of new ones that have been set, but these have not as yet been declared official by the Paris office of the Federation. So in the meantime we'll pass these along for your edification.

World's Records:

Duration, held by Russia, 5 hrs., 10 minutes.

Distance, Russia, 221.701 miles.

Altitude, Russia, 13,622 feet.

Speed in a straight line, USA, 80.634 mph.

Control line speed, France, 143.704 mph.

World's "Class" Records:

Orthodox rubber models: Duration, Russia, 1 hr., 16 min.; Distance, Hungary, 31.23 miles; altitude, Hungary, 4,731 feet; speed in a straight line, country not specified, 66.536 mph.

Orthodox gas models: Duration, Russia, 5 hrs.,. 10 min.; distance, Russia, 221.701 miles; altitude, Russia, 13,622 feet; speed in a straight line, USA, 80.634 mph.

Orthodox gas models, control line speed: Class I, Czechoslovakia, 90.038 mph.; Class II, France, 119.452 mph.; Class III, France, 143.704 mph.

Orthodox gas models, telecontrolled (radio controlled) flight: Duration, Russia, 23 min., 7 sec. (later broken by Walt Good); distance, none established; altitude, none established; speed in a straight line, none established.

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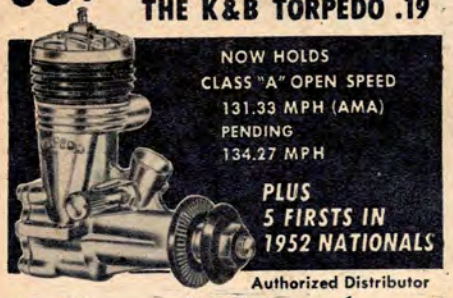

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Orthodox jet models, control line speed: USA, 128.374 mph.

Orthodox rubber models, rise-off-water: Duration, Russia, 1 hour, 13 min., 26 sec.; distance, Hungary, 28.055 miles; altitude, Hungary, 3,080 feet; speed, Russia, 47.781 mph.

Orthodox gas models, rise-off-water: Duration, Russia, 2 hrs., 50 min.; distance, Russia, 81.149 miles; altitude, Russia, 13,484 feet; speed, Russia, 31.1 mph.

Orthodox gas models, rise-off-water, control line speed: Class I, Russia, 43.531 mph; Class II, Russia, 46.237 mph; Class III, none established.

Orthodox gas models, rise-off-water, telecontrolled flight: Duration, none established; distance, none established; altitude, none established; speed, none established.

Special aircraft, rubber powered: Duration, Hungary, 7 min., 43 sec.; distance, Hungary, 780 feet; altitude, none established; speed, none established.

Special aircraft, gas powered: Duration, Russia, 27 min., 35 sec.; distance, Russia, 7.581 miles; altitude, none established; speed, none established.

Special aircraft, gas powered, control line speed: Class I, Russia, 49.135 mph; Class II, Russia, 41.831 mph; Class III, Russia, 34.158 mph.

Special aircraft, gas powered, telecontrolled: Duration, none established; distance, none established; altitude, none established; speed, none established.

Orthodox gliders: Duration, Russia, 3 hrs., 18 min.; distance, Hungary, 86.867 miles; altitude, Hungary, 7,756 feet.

Orthodox gliders, telecontrolled: Duration, none established; distance, none established; altitude, none established.

Flying wing rubber models: Duration, Hungary, 35 min., 42 sec.; distance, Hungary, 3.262 miles; altitude, none established; speed, Russia, 27.293 mph.

Flying wing gas models: Duration, Russia, 3 hrs., 31 min.; distance, Russia, 67.906 miles; altitude, Russia, 9,229 feet; speed, Russia, 30.870 mph.

Flying wing gas models, control line speed: Class I, Russia, 41.562 mph.; Class II, USA, 96.629 mph; Class III, Russia, 101.561 mph.

Flying wing gas models, telecontrolled: Duration, none established; distance, none established; altitude, none established; speed, none established.

Flying wing jet models control line speed: USA, 120.143 mph.

Flying wing rubber models rise-off-water; Duration, Hungary, 2 min., 41 sec.; distance, Hungary, 1,427 feet; altitude, none established; speed, Russia, 19.775 mph.

Flying wing gas models rise-off-water: Duration, Russia, 33 min., 5 sec.; distance, Russia, 5.375 miles; altitude, Russia, 5,085 feet; speed, none established.

Flying wing gas models rise-off-water control line speed: Class I, none established; Class II, Russia, 60.817 mph; Class III, none established.

Flying wing gas models rise-off-water-telecontrolled: Duration, none established; distance, none established; altitude, none established; speed, none established.

Flying wing gliders: Duration, Russia, 1 hour, 16 min., 32 sec.; distance, Russia, 20.729 miles; altitude, Russia, 1,794 feet.

Flying wing gliders telecontrolled: Duration, none established; distance, none established; altitude, none established.

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Improved with new 2¾" alum. spinner and 3" Veco alum. disk semi-pneumatic rubber wheels. Planked type body, parts printed on balsa, and all parts. Set **$9.00**

REPUBLIC P47D GAS MODEL

35¾" span. ⅞" scale. Length 30½". One-piece moulded, clear plexiglas cockpit enclosure. 2½" scale alum. disk rubber wheels. Body planking full size plans. Uses B or C motor. Set **$5.95**

9' TAYLOR CRAFT GAS MODEL

9 foot Span. Can use Radio control. Set has 36 ready cut wing ribs, cut plywood body formers; 16" carved prop, tail wheel unit, 2 full size plans, printed balsa, silkspan, etc. Uses "C" type motor, single, twin, or 4 cyl. motor. Set without motor or wheels, postpaid..... **$17.50**

Extra pair of 4½" airwheels, $3.00

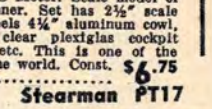
VOUGHT F2G GAS MODEL

41" span. U Control B or C Motor. Scale model of 1949 Thompson Trophy winner. Set has 2½" scale rubber tired alum. disk wheels 4¼" aluminum cowl, body planking, moulded, clear plexiglas cockpit enclosure, plastic spinner, etc. This is one of the finest equipped models in the world. Const. set **$6.75**

Fokker D-8 Gas

39" span. 1½" scale. Const. set **$5.95**

Stearman PT17



Set has 2½" celluloid motor, plastic prop, etc. 23" span. Const. set **$2.95**

Curtiss F11C4

32" span. 1" scale. Const. set. Rubber driven.. **$4.50**

Grumman-F3F1

32" span. 1" scale. Const. set. Rubber driven... **$3.75**

N. American B-25

33½" span. ½" scale. Const. set. Rubber driven... **$4.00**

WATCH FOR

4 New Scale GAS MODELS

coming soon!

Elf 1-3 h.p. 4¼" wide. Price **$49.50**

1 Twin Motor Bomber
1 "B" Type Racer
2 ½A Scale

All top flight beauties

Add 25c for postage. Catalog—10c coin

MINIATURE AIRCRAFT CORP.

83 Low Terrace, Staten Island 1, N. Y.

New and Different...

NORTH AMERICAN "SAVAGE" AJ-1

Berkeley's

See this unusual kit at your local shop, and judge for yourself **$6.95**

U. S. Navy Atom Bomb Carrying Fighter!

Newest BERKELEY Scale *Controliner*

KIT FEATURES:
- Carved & Hollowed Fuselage!
- Carved & Hollowed Nacelles!
- Five Metal-Hub Rubber Wheels!
- Complete Decals!
- Embossed Bubble Canopy!
- Deep-Drawn Metal Engine Cowls!
- Shaped Leading & Trailing Edges!
- Die-Cut Ribs, Bulkheads, Etc.
- Genuine Jim Walker "U-Control"!

27" Wingspan—⅜" Scale (from factory plans)
(No deviations from scale on this model)

This is the ultimate in scale model controliners. Power it with two gas engines up to .099, and a Jetex Jetmaster "150" as a "Stinger" in the tail for extra high speed boost, just like the real "Savage". Kit includes arresting hook for Carrier Event landings. Fly high speed on all three engines, fly low speed on one engine to win in high-low speed contests.

FOR TWIN ENGINES PLUS JETEX...PERFECT SCALE!
Two .045 to .099 Engines, and Jetex 50, 100, 200, or new Jetmaster 150 unit. Adjustable balance!

(Jetex unit for reserve power & scale effect)

Scale jet air intake for Jetex cooling, thrust augmenter... No access hatches to mar finish. Jetex unit slips out scale size jet exhaust opening with ease ... Full depth ply wing spar plus sheet planking amply support engine nacelles under landing impact.

$5.95

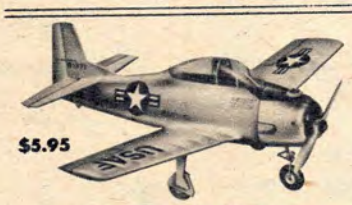
North American "P-51 MUSTANG"
37" Wingspan—For .19 to .36 Engines
Features retractable-extensible landing gear, throttle, flap, elevator and rudder control.

$4.95

Betty Skelton's "PITT'S SPECIAL"
25½" Wingspan—For .19 to .33 Engines
Authentic pre-fabricated Controline design of the famous National Aerobatic Champion.

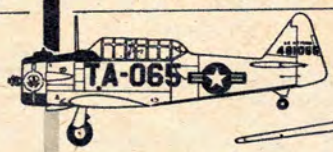
$5.95

"MINNOW" Cosmic Wind
28" Wingspan—For .09 to .36 Engines
This 1½" scale Goodyear racer features "Step Keel" construction. Meets Team Racing rules.



$5.95

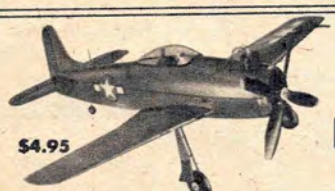
North American "T-28"
30" Wingspan—For .23 to .36 Engines
This new Air Force trainer makes a perfect stunt-scale design. Tricycle gear, pre-fab.



Complete Kit—
$4.95

$5.95

CESSNA "195"
36" Wingspan—For .19 to .49 Engines
This beautiful 1" scale controline lightplane kit is pre-fabricated. Features "Step Keel."



$4.95

Grumann "F-8-F BEARCAT"
35½" Wingspan—For .29 to .65 Engines
Features "Autotrol" rudder operation, eliminating slack control lines in critical maneuvers.

$4.95

Republic "P-47 THUNDERBOLT"
40¾" Wingspan—For .29 to .65 Engines
Engine throttle control, fully automatic wing flaps, shear-pin mounts and die-cut parts.

NORTH AMERICAN AT-6

(U. S. Navy Designation SNJ-5) "TEXAN"
Wingspan—¾" scale—For "19" to "33" Engines

The "T-6" has been taught more people to fly than any other airplane. Hundreds of thousands of pilots who flew this plane will thrill to see this model perform. Beautiful to look at and easy to handle. With its stunt airfoil, it can do everything in the rule book.

DEEP DRAWN METAL COWL	SIMPLIFIED FUSELAGE ASSEMBLY	"CLEAN CUT-OUT" BALSA PARTS
MOLDED PLASTIC BUBBLE CANOPY	COMPLETE METAL HARDWARE	SHAPED LEADING EDGES
COLOR DECALS FOR USAF OR USN	RUBBER WHEELS "U-CONTROL"	SHAPED TRAILING EDGES

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BERKELEY
DEALERS & DISTRIBUTORS

If no local dealer is convenient, mail orders will be filled by Berkeley Model Supplies, Dept. AT, West Hempstead, N. Y. Please include 25¢ packing & postage.

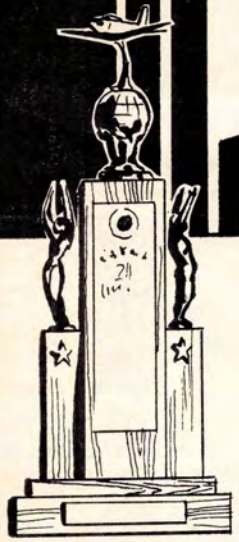
Berkeley's 1952 CATALOG
Completely revised — up to date! Contains complete line of kits, Supplies, Accessories, Information. **25¢**

WOW! WASP WINS

READ ALL ABOUT IT!

MAKES CLEAN SWEEP!

ALL ½A EVENTS!

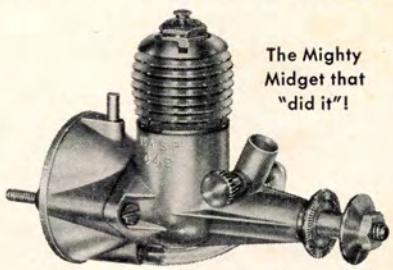


SETS TWO NEW A. M. A. RECORDS

....at the 1952 "NATIONALS"

National Model Airplane Championships at Los Alamitos and Santa Ana, Calif.

Yes, WASP .049 engines had a field day and "stole the show" at the official A.M.A sanctioned. 1952 Championships. With contestants from all over the nation competing, WASP-powered planes took first in every 1/2A event, most of the 2nd's, 3rd's, and all other places—and set 2 new A.M.A. records. This against the "stiffest" possible competition *ever*. Check the partial list below and see for yourself we've proved everything we've been saying about this favorite performance-tested power plant of winning contestants. See your dealer for your WASP *today*—and join the "winners circle" *tomorrow!*



The Mighty Midget that "did it"!

Wasp .049 DISPLACEMENT

Here is How WASP-POWERED *Planes Placed:*

FREE FLIGHT GAS — CLASS 1/2A — OPEN
FIRST six places.

FREE FLIGHT GAS — CLASS 1/2A — SENIOR
FIRST—plus other places.

FREE FLIGHT GAS — CLASS 1/2A — JUNIOR
FIRST—plus other places.

FREE FLIGHT GAS — ROW — SENIOR
FIRST place. *New record set.*

FREE FLIGHT GAS — 1/2A — SCALE
FIRST—plus other places.

U. S. NAVY CARRIER — CONTROL LINE
FIRST place (twin-engine powered).

P. A. A. LOAD — CLASS 1/2A
FIRST, Third and Fourth.

P. A. A. CLIPPER CARGO — CLASS 1/2A
FIRST — 17 1/4 ozs. plus 4 oz. dummy. *New record set.*

Above is a partial list of known "Winners with Wasp" compiled to the best of our knowledge and belief. Watch for a more complete list in future ads.

TO BE A WINNER Get a WASP!

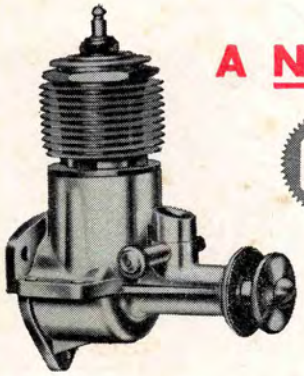
ATWOOD MANUFACTURING CO. • PICO, CALIF.

announcing 2 NEW OK CUBS

For PRICE, POWER, and PERFORMANCE

15TH ANNIVERSARY OK 1937 ✕ 1952

A Complete Line of PROVEN Miniature Engines and Accessories



A NEW DISPLACEMENT!

OK CUB .14

Produced at the request of top plane designers! Opens an entirely new field for the hobbyist. A light-weight engine with the extra power so often needed. For free flight, control line and radio controlled flying.

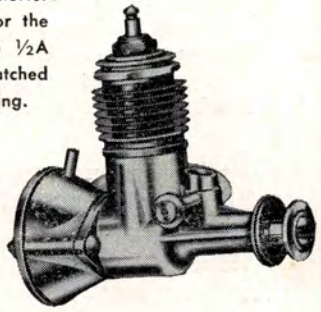
CLASS A

Displ.	.149	RPM	3,000 to 15,000
Bore	.600	Weight	2¾ oz.
Stroke	.530	Price	only **$8.95**

A NEW CUB FOR THE EXPERT!

OK CUB .049X Combination Package

Companion to the famous .049 Cub. Provides higher output due to shorter stroke, larger bore, lighter weight. Designed for the advanced hobbyist. The top performer in the ½A Class. Package includes assembled engine, matched prop, extra rear cover, fuel tank, neoprene tubing.

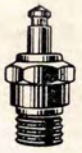


CLASS ½A

Displ.	.049
Bore	.420
Stroke	.360
RPM	3,000 to 15,000
Price	only **$6.25** Complete

SEE YOUR DEALER . . . Or write us direct

O. K. GLOW FUEL
Pint 85¢

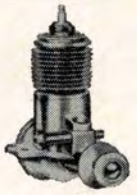


O. K. PLUGS
Short or long — 59¢

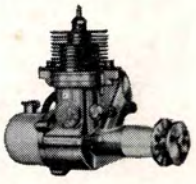
O. K. CUB .049
POWER KIT
"Assemble-it-Yourself"
$4.95

O. K. CUB .049
$5.25

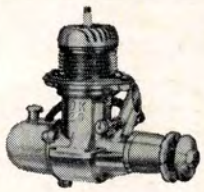
O. K. CUB .074
$5.95



O. K. CUB .099
$6.95



O. K. MOHAWK CHIEF
$9.95



O. K. HOTHEAD
$10.95

O. K. COMBINATION PACKAGES

CUB .039	$4.95
CUB .049	$5.75
CUB .074	$6.75
CUB .099	$7.75

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